

Exhibit C

Part Two

210. Within months after completing the initial survey, Dentsply conducted another survey isolated to measure just the aesthetics of Trubyte teeth. Dentsply tested its own teeth as well as its rivals on unmarked cards. (Tr. 2495-96 Clark.)²¹ The research showed Dentsply that Trublend SLM and Dentsply's economy teeth rated near the top for aesthetics, superior to Vita and Ivoclar teeth. (Tr. 2496 Clark.) In contrast, Trubyte's mainstream premium plastic tooth, the Bioform IPN, rated slightly below Vita and Ivoclar. (Tr. 2496 Clark;

211. Dentsply quickly conducted additional research on a separate issue: Vita shades. More specifically, Dentsply looked at whether Trubyte should offer a tooth line in Vita shades. (Tr. 2497 Clark.) The Vita Classical Shade Guide is the most popular shade guide in the market for fixed prosthetics (crown and bridge work). (Tr. 2380 Armstrong; Tr. 2497 Clark.) Mr. Whitehill testified that between of dentists have Vita Classical Shade Guides in their offices and use it frequently.

see also Tr. 2497 Clark (shade guide used in 90% of crown and bridge restorations).²² The Vita shade guide gained prominence only as recently as the early 1990s. (Tr. 98, 527 Weinstock.) About of dentists use the new 3D shade guide.

212. Dentsply discovered that while 21% of dentist prescriptions for dentures in 1993 were written using Vita shade designations, 73% of these prescriptions were cross-matched to Trubyte teeth. (Tr. 2498-99 Clark.) The research further showed that a minority of labs was dissatisfied with the shade cross-matching capability of Trubyte's Bioform line. (Tr. 2499-2500 Clark.)

²¹ Importantly, the survey was conducted with respondents viewing teeth on tooth cards, not in patients' mouths. (Tr. 2495 Clark.) Ivoclar teeth appear far more attractive on tooth cards than they do in the mouth. (Tr. 2114-15 Jenson; Tr. 2855 Challoner;

²² The evidence is unclear however, on the percentage of dentists that use the Vita shade guide in prescribing a denture.

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213.

At trial, Mr. Clark explained that in 1994 dentists were beginning to prescribe more Vita shades for the growing number of partial and combination cases. (Tr. 2498 Clark.) To an increasing degree, denture wearers no longer needed to replace all of their natural teeth with a full denture because they were keeping their natural teeth longer. Partial dentures or combination cases are placed in the mouth next to a crown and bridge restoration, which is usually in a Vita shade. (*Id.*)

214.

Viewed prospectively, Dentsply needed a new aesthetic tooth line in Vita shades to address the growing partials market. (Tr. 2497-2500 Clark.)

215. Research showed the aesthetics of the Trubyte prototypes to be superior to existing competitive teeth. (Tr. 3452 Miles; For example, the Dentsply prototype rated first in aesthetics, over all other brands of teeth. Tr. 2508-09 Clark.) The studies "showed laboratories preferred [Dentsply's] prototype tooth to all other competitors." (Tr. 3452 Miles.)

216. Once satisfied with the results of the market research, Dentsply senior management approved funding to construct a prototype of its new line, which Dentsply then built from the "ground-up." (Tr. 2504-11 Clark.) Within one year after initiating this technical work on the new prototype, Dentsply successfully completed construction of Portrait, which it launched in Fall 1995. (Tr. 2513 Clark.) Dentsply named the tooth

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Portrait because the tooth was synonymous with the highly aesthetic image Dentsply was trying to create with the brand. (Tr. 2513-14 Clark.)

217. Portrait met all of the objectives that Dentsply had set for the new tooth line. Specifically, it improved aesthetics and, according to industry participants at all levels, matched the Vita shade guide even better than Vita's teeth. (Tr. 2513 Clark; Tr. 2335, 2381 Armstrong (Portrait matches Vita shade guide "slightly better than Vita" does); Tr. 528 Weinstock (Portrait teeth matches Vita shades better than Vita teeth).) What makes Portrait teeth so innovative is not just the shading, but the blending or layering technology that makes up the tooth, which provides for maximum aesthetics. (Tr. 3449-50 Miles.) The teeth have depth and translucency, which make the teeth appear extremely lifelike. (Tr. 3453 Miles.)

218. Portrait was an undisputed commercial success. Trubyte sold in excess of \$3 million of Portrait teeth by the end of 1995, exceeding its target by over \$600,000. (Tr. 2521-22 Clark.) In the first six to nine months, Trubyte also converted at least 75 lab customers to Portrait teeth. (Tr. 2522 Clark.) Christopher Clark, former Vice President and General Manager of the Trubyte Division, believes Dentsply "hit the nail on the head" with its introduction of Portrait, having introduced the first highly-wear resistant, aesthetic Vita shaded tooth. (Tr. 2523 Clark.)

219. Dental lab representatives testified concerning the exceptional attributes and value of the Portrait tooth line. (Tr. 2381 Armstrong ("I don't know of any shades that Portrait doesn't match as well to the Vita guide as Vita does"); Tr. 3270 Langer (Portrait is the "best tooth" with the "newest technology"); Tr. 1984 Jaslow (Portrait "solved a dilemma" because "their shades matched the Vita shades"); Tr. 535 Weinstock (Portrait was "absolutely" a huge success); Tr. 2844 Challoner (could use Portrait in a "wider number of applications").)

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More significantly, Mr. Miles, now Dentsply's Chairman, believes that Dentsply would have lost market share had it not launched the Portrait line of teeth. (Tr. 3453 Miles.)

220. The agency suggests that Dentsply does not invest in innovation. (Agency PFF ¶ 207-211.) But Dentsply invested approximately two years and \$1.3 million in the development of Portrait.²³ This investment included funding for tooth moulds, a CAD/CAM design station,²⁴ shade guide tolling, upgrade of a rotary moulding unit and injection moulds to bring out the new tooth line. (Tr. 2510-12 Clark; DX1572.) Additionally, Trubyte invested in Research and Development and introductory marketing sales support. (Tr. 2512 Clark.) The agency also asserts that Dentsply was selling aesthetically inferior teeth in the early 1990s and was late in addressing this situation with the introduction of Portrait in 1995. (Agency PFF ¶¶ 202, 208-09.) In actuality, Dentsply's overall tooth offering in the early 1990s was typified by superior quality, high wear-resistance and excellent aesthetics. ; Tr. 2494-95 Clark.) Further, Dentsply launched its highly aesthetic, Vita shaded Portrait IPN tooth line only two years after its initial market research first alerted Dentsply that Vita shaded aesthetic teeth represented a competitive threat. ; Tr. 2513 Clark.)

²³ At the time, Trubyte's sister division, Detech, had just introduced a Vita shaded IPN line in Germany called BioPlus. Dentsply considered and rejected the suggestion to bring BioPlus to the United States because of the higher manufacturing costs in Germany and BioPlus's European moulds. (Tr. 2500-01 Clark.)

²⁴ CAD/CAM is a computer-aided design and manufacturing process for artificial tooth moulds, which enables Trubyte to replicate teeth in a consistent and exacting manner. (Tr. 2512 Clark.) After the design is made, the computer determines the tool cutting paths and directly commands the milling machines to cut the tooth moulds. (Tr. 3454 Miles.) A milling machine is a cutting tool. The machine grinds out the anatomy of the tooth from a block of aluminum or steel, which eventually becomes the mould. (Tr. 3454 Miles.)

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3. Dentsply's Recent Innovations In The Tooth Manufacturing Process

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For example, around 1990 Dentsply developed the CAD/CAM concept for producing tooth moulds.

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223. Dentsply also has made significant innovations in the manufacturing process for teeth.

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4. Dentsply's Revolutionary Eclipse System

225. In Spring 2002, Dentsply launched the Eclipse denture system - a revolutionary acrylic that eliminates the need for investment during the fabrication of a denture. (Tr. 2131 Jenson ("We're going to revolutionize the whole acrylic industry one more time and be the innovators").) Eclipse allows the dental lab to fabricate a denture without using wax. (Tr. 2526 Clark.) It saves time for the lab because the lab will not have to invest, pack and cure the denture model. (Tr. 3324-25 Coykendall.) The investment process involves putting the wax material into the wax mold to create the denture device. (Tr. 2131 Jenson.) Eclipse significantly reduces the cost of making dentures for dental labs. (Tr. 3458 Miles.) Further, Eclipse helps to create a better fit for the patient. (Tr. 2131-32 Jenson.) In the words of Mr. Coykendall of Hopkins Dental Lab, an inveterate Ivoclar tooth lab, after seeing Eclipse demonstrated: "I liked the idea before I saw it and now I want it It eliminates investing, packing, curing in the conventional sense. It's a time-saver and I believe a better product." (Tr. 3324-25 Coykendall.)

B. Dentsply Completely Has Outpaced Its Rivals With Respect To Efforts To Generate Demand For Its Artificial Teeth At The Dental Lab, Dentist And Even Patient Levels

1. Dentsply's Demand-Generating Activities

226. Dentsply generates demand for its artificial teeth through pull-through marketing at all three market levels (lab, dentist and patient). (Tr. 2543-44 Clark;

By creating demand at the lab level, Trubyte pulls volume from the dealer. By creating demand at the dentist level,

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Dentsply pulls the product from the lab and the dealer. (Tr. 2568 Clark; Tr. 468 Weinstock (if doctor prescribes Dentsply tooth, Dentsply pulls business from the lab and the dealer).) Because of the significant influence labs have on tooth brand selection for a majority of denture cases, Dentsply's primary demand-generation focus is on the lab. (Tr. 2140, 2165 Jenson; Tr. 2543-44 Clark.)

a. The Trubyte Sales Force

227. The primary marketing vehicle that Dentsply uses to create demand is its sales force. (Tr. 2544 Clark.) Dentsply markets to its customers by making sales calls on dental labs, dentists and dental schools. (Tr. 2139-40 Jenson;

228. Since the early to mid 1990s, Dentsply has employed between 30 to 32 outside sales representatives. Dentsply had the largest removable-focused sales force among its competitors, and, not surprisingly, called on more denture labs than Dentsply's rivals. (Tr. 2543-44 Clark.) Today, Dentsply has 31 outside sales representatives dedicated to the sale of Trubyte artificial teeth. (Tr. 2136, 2139 Jenson.) Dentsply also has four Regional Managers who coordinate sales and marketing efforts in four regions of the United States. (Tr. 2079-80 Jenson.) The primary responsibility of a Regional Manager is to train, develop, coach and mentor the sales representatives. (Tr. 2545 Clark.)

b. Dentsply's Promotional Efforts With Dental Labs

229. Dedicated Trubyte tooth sales representatives generate demand at the lab level for Trubyte teeth by calling on dental labs. In 2000, 60% of all Trubyte sales calls were made to dental labs. (Tr. 2166 Jenson.)

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Ten thousand of these calls were to dental labs, or almost 48% of all sales calls.²⁵ (Tr. 2165-66 Jenson.) The level of focus on dentist in 2001 was unusual. Dentsply's general goal is to have approximately 65% of the dedicated tooth sales force's calls made to dental labs. (Tr. 2140, 2166 Jenson.) Mr. Weinstock of Zahn Dental Supply acknowledged that Trubyte sales representatives call on "every dental lab" that they can find. (Tr. 469, 472 Weinstock (Dentsply has created demand for its teeth through marketing and sales efforts).) He agreed that Dentsply "provides the best marketing support of any manufacturer in the country." (Tr. 544 Weinstock.)

230. Those lab representatives who testified regarding Dentsply's promotional efforts agree that Dentsply does "make a market" for its teeth. (Tr. 2349-50 Armstrong; Tr. 1980 Jaslow ("I think Dentsply spends an awful lot of energy in promoting, in educating their teeth. So I think they are out there in the doctors' offices, they are giving clinics, putting on lectures and heavily advertising their teeth in journals. They are also in universities. They are all over."); Tr. 2938-39 Mariacher (Trubyte sales representatives "are in the laboratories helping us. If we have problems, they help us with them"); Tr. 3272-76 Langer (Trubyte representative who calls on Langer Dental Arts "has a deep concern" for lab and lab's success, understands lab business, calls on dentist customers of lab, brings market literature to lab, and offers training; in "national trade journals, you see advertisements that Dentsply has all the time on their acrylics, their teeth," which "without question" help create demand for Trubyte teeth; *see also* Tr. 471 Weinstock (Zahn will "fill order that the Dentsply rep[resentative] created").)

231. During their sales calls to dental labs, Dentsply's Trubyte sales representatives spend time with lab owners, denture department managers and

²⁵ Additionally, Dentsply attends approximately 200 dental shows per year -- 170 dentist shows and 30 lab shows. (Tr. 2079 Jenson.)

technicians. (Tr. 2545-46 Clark; Tr. 2946 Mariacher (representative "would help our tooth room clerk review their stock and he would help us make order and help us do returns. . . . And on the marketing side, he would show us new products that were coming out . . . and show us how to introduce these new products.").) Sales representatives are expected to be familiar with the objectives of the lab, understand issues that the lab is facing, and help the lab fulfill its goals. For example, National Dentex testified that its Dentsply sales representative helped the National Dentex labs to reduce inventory and to increase turns, thereby increasing its profitability. (Tr. 2948-51 Mariacher; DX322.) Additionally, sales representatives perform hands-on product demonstrations of Trubyte products and help troubleshoot any technical problems the lab is experiencing with Trubyte products. (Tr. 2545-46 Clark; Tr. 2946 Mariacher (Trubyte representative was "technically oriented").)

232. One of the purposes of a lab sales call is to convert a lab using competitive artificial teeth to using Trubyte artificial teeth. (Tr. 2167 Jenson.) Dentsply accepts the return of competitive lines of teeth in exchange for Trubyte teeth only if a dental lab makes the commitment to market Trubyte teeth. (Tr. 2169-70 Jenson.) This practice, part of Dentsply's Competitive Tooth Stock Conversion Program, is known as a "tooth swap." (Tr. 2573-74 Clark; Tr. 2169 Jenson.)

233. Trubyte designed the tooth swap program to handle the objections of labs that are interested in using Trubyte teeth but already hold inventories of competitive teeth. (Tr. 2573 Clark; Tr. 2169-70 Jenson.) To overcome the barrier of a competitive inventory, Dentsply will swap out a lab inventory of competitive teeth if the lab orders twice that amount in Trubyte teeth. (Tr. 2169-70 Jenson.) For instance, Dentsply will take a \$5,000 competitive inventory from a lab if that lab orders \$10,000 in Trubyte teeth. (Tr. 2170 Jenson.) Dentsply only effects a tooth swap if the lab is sold first on the

superior quality of Trubyte teeth, and makes a commitment to market Trubyte teeth. (Tr. 2574-75 Clark; Tr. 2169-70 Jenson;

234. Based on input from the Lab Advisory Meetings, Dentsply took a number of actions. First, beginning in 1993, the Trubyte Division established its Preferred Lab Group Program. (Tr. 2534-2537 Clark; DX101; *see also* DX121 (1993 Trubyte Preferred Lab Group Program with DSG); DX251-A (1995 Trubyte Preferred Lab Group Program with DSG).) Through this program, Dentsply provides rebates to participants, in the form of free teeth, based on labs' purchases of Trubyte teeth compared to their prior year's purchase volume. (Tr. 2535-36 Clark; Tr. 2943-44 Mariacher.) Dealers play no role in the Preferred Lab Group Program. (Tr. 2535 Clark; Tr. 2945 Mariacher.) During the first year of participation in the Preferred Laboratory Group Program, National Dentex's Trubyte tooth purchases increased 40 percent, Dental Services Group's purchases increased 13 percent and Dental Arts Laboratory's purchases increased 25 percent. (Tr. 2539-40 Clark.)

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238. Dentsply seeks to stimulate lab purchases of Trubyte teeth by focusing marketing and promotional efforts on labs. Since 1994, Dentsply has offered the "Add-A-Drawer" Financing Program. (Tr. 2518 Clark; ; DX1603 at 66068.) This program, intended to promote labs to trade up to the Portrait premium line, provides extended-term financing to labs that purchase at least one incremental tooth cabinet drawer of Portrait teeth. (Tr. 2518-19 Clark.) Also to promote lab trade up to the Portrait line, Dentsply developed the Portrait Spectacular Rebate Program. Under the program, Trubyte provides labs that purchase a Portrait tooth stock valued at \$1,000 or more with a 5% rebate, paid in teeth or merchandise products, on Portrait tooth usage during the six-month-interval following the purchase of the stock. ; Tr. 2171 Jenson; *see also* DX1600 (Portrait lab business kit.)

239. To streamline the tooth ordering process, Dentsply developed the Dentsply Order Network or DON system. (Tr. 2171 Jenson; DX341 at DPLY-A 99720.) DON allows labs to order teeth via the internet or over phone lines using a bar code scanner with a computer or a portable data terminal. (Tr. 2171-74 Jenson; DX341.) Without DON, or a similar system, labs manually review the inventory in their tooth cabinets, identify those teeth they need to order, place a telephone call or send the order via fax to a dealer. (Tr. 2171-72 Jenson; Tr. 2836-37 Challoner.) The lab uses DON to refill its inventory by electronically sending its tooth order to the dealer. (Tr. 2172-73 Jenson; DX341.) DON benefits labs by: eliminating errors made when ordering Trubyte teeth; saving time ordering, thereby increasing production; making ordering easier; reducing tooth out-of-stocks; and assisting with tooth stock inventory management. (Tr. 2172-73 Jenson; Tr. 2837-38 Challoner; 1986-87 Jaslow; DX341 at DPLY-A 99718.)

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DON benefits dealers by: reducing errors from customers, thereby reducing customer call-backs; reducing time spent receiving orders because DON takes less time than phone orders and is more legible than fax orders; and reducing time spent fulfilling orders because orders are sorted by brand, upper or lower, mould, and shade. (DX341 at DPLY-A 99718.)

**c. Dentsply's Promotional Efforts Focused
On Dentists**

240. At the dentist level, Dentsply's sales representatives try to convince dentists to prescribe Trubyte teeth, thereby increasing the demand. (Tr. 2546 Clark.) If the dentist prescribes teeth by brand, labs must comply with the prescription and use that brand in the fabrication of a denture. (Tr. 2141 Jenson.) Dentsply works toward this objective both through personal sales calls with dentists and a series of promotional programs geared specifically to dentists. (Tr. 2140-49 Jenson; DX1601 (promotional program to create pull-through demand for Portrait IPN teeth).)

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244. Dentsply's Laboratory Cooperative Marketing Program, also includes the "Imprinting Program" in which Trubyte disseminates promotional material to dentists on behalf of labs. (Tr. 2519 Clark; Tr. 2134, 2165 Jenson;

Trubyte distributes

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customized prescription pads and literature pieces to all 40,000 denture-doing dentists in the United States. (Tr. 2143-2144 Jenson.)

245. The Denture Opportunity Program (“DOP”), the successor to Trubyte’s Replacement Denture Program , is a “major initiative” to assist dentists with their practices and to expand the overall tooth market. (Tr. 2155-56 Jenson;

246. The DOP contains three different facets: assist dentists and their staff with patient management; assist dentists to create better dentures through educational programs focusing on technique; and assist dentists with patient retention. (Tr. 2155-56 Jenson; Tr. 2559-60 Clark.)

247. DOP is an example of a promotion that directly includes the patient. Under the American Dental Association’s recommended 5 to 7 year life cycle for dentures, there are an estimated 20 million denture-wearers who, for a variety of reasons, should have their dentures replaced. (Tr. 2156-57 Jenson; Tr. 2559 Clark;

Accordingly, the patient component of the DOP is known as the “20 Million Smiles Program.” (Tr. 2156 Jenson.)

d. Dentsply’s Promotional Efforts Targeting Dental Schools

248. Dentsply’s demand-generating activities are not limited to practicing dentists. Dentsply has maintained a presence in the dental schools for decades.

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In fact, Dentsply's presence in dental schools always has been at the "core" of its marketing and sales efforts. (Tr. 2138 Jenson.) Trubyte has invested a considerable amount of time over many years penetrating the dental schools and trying to make the dental students familiar with Trubyte teeth. (Tr. 2546-47 Clark; Tr. 2936 Mariacher ("They call on the dental schools. They're in the dental schools. They give the dental students product and teeth and the dental students are very familiar with Dentsply teeth and Lucetone 1999, which is their denture base. Those are the standards in the United States.").)

249. Dentsply's tooth sales representatives visit each dental school about once a month. (Tr. 2136 Jenson.) In total, roughly 10% of the dedicated tooth sales force's calls are made to dental schools and dealers. (Tr. 2140 Jenson.) This sales call activity level at dental schools has provided Trubyte with a long-time strategic advantage. (Tr. 2546-47 Clark.) During each visit, Dentsply's sales representatives usually spend a half day in a dental school with key academic contacts and the school's tooth counter manager. (Tr. 2136-37 Jenson; Tr. 2550 Clark.)

250. Dentsply consigns tooth stocks to dental schools. (Tr. 2547 Clark; Tr. 2137 Jenson.) There are 53 dental schools in the United States, and Trubyte teeth are used by all but one. (Tr. 2547 Clark; 2137 Jenson.) Dentsply's sales representatives manage these consigned inventories. (Tr. 2137-38 Jenson.)

251. Dental schools use the teeth in clinics, which serve as the primary teaching vehicle for hands-on application in dental schools. (Tr. 2547-48 Clark; Tr. 2136-37 Jenson.) Dental students utilizing these teeth learn the Trubyte mould system as part of their dental school instruction. (Tr. 2137 Jenson.)

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252. Dentsply's efforts in dental schools flow from the company's philosophy "what gets taught gets bought." (Tr. 2136 Jenson.) Once dentists learn and understand the benefits of a product, unless something is significantly better, they generally do not change to a different product. (Tr. 2136 Jenson.) Dentsply heavily emphasizes use of Trubyte products, including its tooth mould system, in dental school curricula and clinical programs. (Tr. 2136-37 Jenson.) These dental school efforts have given Dentsply a "long-time strategic advantage" for Trubyte products. (Tr. 2546-49, 2551 Clark.)

253. Dentsply's rivals recognize that Dentsply has well-established "relations with dental schools, old relations. And each dentist going through school ... prefers to use [Trubyte teeth] in his office later on [because that is] what he was taught on." (Tr. 1857-58 Becker.)

e. Education And Training Activities

254. In connection with its product promotional efforts, Dentsply invests in an Education Department, responsible for training labs and dentists and familiarizing them with dentures generally and Trubyte products specifically. (Tr. 2552-53 Clark.) Certified Dental Technicians²⁷ ("CDTs") staff the Trubyte Education Department. (Tr. 2552 Clark.) The Trubyte Division, for a period, also staffed the Education Department with a dentist. (Tr. 2552 Clark.)

255. In 1984, Dentsply opened the "Dentsply Educational Center" at its York, Pennsylvania location. (DX331 at 2.) The Dentsply Educational Center consists of a "fully-equipped, state-of-the-art dental laboratory." (DX331 at 2.) Dentsply

²⁷ A Certified Dental Technician or CDT is a dental technician who has obtained professional certification to fabricate dentures and denture-related appliances. To become a CDT, a technician additionally would work in a dental laboratory for five years, and then pass both the written and practical components of the CDT examination. (Tr. 1956-57 Jaslow; Tr. 2552-53 Clark.)

schedules courses that provide comprehensive training in removable prosthodontics. (DX331 at 2.) These courses include the Trubyte E.P.F. Complete Denture Technique Course, Expanded Trubyte Complete Denture Workshop, and Introduction to Basic Procedures Course. (DX331 at 2.) These educational courses are "technique-oriented" and focus on "how to take care of patients" or "do better dentures," whether Trubyte products are used or not. (Tr. 2153 Jenson.)²⁸

256. In addition to the Educational Center courses, Dentsply offers condensed courses, co-sponsored by dental lab associations, throughout the United States. (DX331 at 6.) The Trubyte Division also provides educational and training programs jointly with other Dentsply divisions. (Tr. 2154-55 Jenson.) For instance, Trubyte has established "tie-in programs" with Dentsply's L.D. Caulk Division, to teach dentists techniques to make a better denture, such as improved impression making, more accurate shade matching, and how to select the right tooth for the patient. (Tr. 2154-55 Jenson.)

257. In 1996, Dentsply enhanced its Education Department with Regional Technical Consultants ("RTCs"). An RTC is a CDT who also functions as a sales representative. (Tr. 2553-54 Clark.) Dentsply employs one Trubyte RTC in each of its four sales regions of the United States. (Tr. 2554 Clark.) RTCs operate closer to the end-user than the York-based Educational Department staff. (Tr. 2553-54 Clark.) RTCs spend up to 30% of their time in their sales region putting on clinics, courses or training, either formally or informally, and troubleshooting with labs that are having a difficult time with Trubyte products. (Tr. 2554 Clark.)

²⁸ The "general denture principles" taught at these seminars can be used to work with and set up other brands of artificial teeth. (Tr. 3273-74 Langer; Tr. 470-71 Weinstock; Tr. 2946-48 Mariacher.)

2. Dr. Reitman's Analysis Of Dentsply's Promotional Spending Is Wrong

258. Dr. Reitman concluded that Dentsply spends less, as a percentage of tooth sales revenues, than its competitors on promoting and marketing teeth. (Tr. 3955-58 Reitman.) He also concluded that Dentsply's expenditures on its sales force, as a proportion of sales, do not exceed that of its competitors. As a result, he reasons, Dentsply should not be charging higher prices for its premium teeth. (Agency PFF ¶ 353.)

259. On cross-examination, Dr. Reitman conceded that advertising is just one component of Dentsply's marketing program to drive demand for Trubyte teeth. (Tr. 3988 Reitman.) In addition to advertising, a firm like Dentsply incurs costs to promote through its sales force, among other means. As Dr. Reitman acknowledged, each firm in a market must allocate resources for creating demand across advertising, promotion and selling. (Tr. 3988 Reitman.) Allocation of promotional resources is the result of a subjective judgment that a firm makes concerning how to take its product to market. (Tr. 3988-89 Reitman.) The firm's decision may change from year to year, depending on how it determines to best sell its product. (Tr. 3989 Reitman.) As a result, Dr. Reitman conceded, it is relevant to analyze a firm's total effort in terms of creating demand. (Tr. 3989 Reitman.)

260. Dr. Reitman purported to calculate the relative investment of Dentsply, Myerson, Universal and Vident in demand generating activities in 1997 through using sales representatives. (Tr. 3991 Reitman.)²⁹ He concluded that Dentsply chooses to spend less to invest in promoting through 35 sales representatives. (Tr. 3992-93 Reitman.) On cross examination, Dr. Reitman conceded that his calculation showed that

²⁹ Dr. Reitman did not make the same calculations for Ivoclar because in 1997 Ivoclar used no dedicated tooth sales representatives. (Tr. 4018-19 Reitman.)

Dentsply simply needs fewer sales representatives to generate a million dollars of sales. (Tr. 3992 Reitman.) He also conceded that the more relevant calculation is to measure the selling expenses of a company as a ratio to total revenue – rather than to focus on the number of sales representatives. (Tr. 3996 Reitman; for the wide variety of demand-generating and selling activities Dentsply employs, and that Dr. Reitman ignored.)

261. As it turns out, Dr. Reitman underestimated Dentsply's investment in its tooth sales force. Dr. Reitman did not include Dentsply's 17 Trubyte telemarketers in his calculations, even though he acknowledged that they should have been included and that he had included Vident's telemarketers in the ratios he created for Vident. (Tr. 3996-97 Reitman.) He also did not include Trubyte's seven government sales representatives. With the addition of Trubyte's telemarketers and government sales representatives, Dentsply generates approximately or roughly the same as Vident does exclusive of telemarketers concededly not responsible for selling teeth. (Tr. 3996-4001, 4007 Reitman.) Dr. Reitman thus overstated Vident's investment in its sales force.

, 4008-09 Reitman ("Vident reps do not predominantly sell teeth").)

262. Dr. Reitman also purported to attempt to calculate advertising and promotional expenditures of Dentsply and its rivals. (Tr. 4009-16 Reitman.) He conceded that his data represented only a "snapshot" and that firms change their emphasis on these aspects year to year. (Tr. 4016 Reitman.) However, his analysis failed to capture even a snapshot of advertising and promotion for 1997. (*Id.*) Dr. Reitman did not obtain Ivoclar expenses for that year. Instead, he used 1998 data for Ivoclar and 1997 data for Dentsply, Myerson, Universal and Vident. Dr. Reitman conceded that his calculations do not reveal the differences in the decisions of companies year-to-year on

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how to allocate promotional resources. (*Id.*) He agreed that his calculations would look “pretty different” for one of the many years in the 1990s in which Vident failed to invest in promotion. (*Id.*) Dr. Reitman did not consider Dentsply’s significant advertising and promotion of the launch of Portrait, of Trublend SLM and of the Laboratory Cooperative Marketing Program.

263. Dentsply’s expenses for its sales force and promotional support far exceeds its advertising expenditures. (Tr. 4017 Reitman.) Dr. Reitman agreed that this is an example of Dentsply making a subjective judgment on how to allocate its resources. (Tr. 4020-21 Reitman.) He did not perform a comparison firm-to-firm of total selling expenses.

C. The Actual Prices That Labs Have Paid For Dentsply Teeth Are Generally Lower Than The Prices Of Comparable Competitive Teeth Largely As A Result Of Dentsply-Funded Discount Product Programs

264. In the artificial tooth industry, there are two prices that are relevant: the lab price and the retail price. The lab price is the price charged by the manufacturer or dealer to the dental lab. The retail price is the price charged by the lab to the dentist. (Tr. 2189 Jenson.)

265. Dentsply’s competitors that sell directly to dental labs set the lab rate for artificial teeth. Dentsply does not set lab rate pricing.

This provides a competitive advantage for competitors like Vita and Ivoclar over Dentsply. (Tr. 2594-95 Clark; Tr. 1186 Hagler.)

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266.

This increase

always has been just slightly over the rate of inflation. (Tr. 2216 Jenson; Tr. 457-58 Turner.)

267.

Dr. Armstrong of Armstrong Dental Laboratory agrees that Vita's premium teeth are the most expensive on the market. (Tr. 2347-48 Armstrong.)

268. According to Dr. Armstrong, Ivoclar offers the second most expensive premium tooth on the market. (Tr. 2347-48 Armstrong.) For a 1x14, card of teeth, his labs pay \$4 less for Dentsply's Portrait tooth than it does for an Ivoclar tooth, and \$10 less for Portrait than a Vita tooth from Vident. (Tr. 2347-49 Armstrong.)

269. Between 1995-99, Austenal/Myerson increased its prices on premium teeth by 25%, including prices charged to the lab. (Tr. 1358-59 Swartout.)

270. The agency argues that Dentsply has been the "price leader" in the artificial tooth market, thus providing other brands a "price umbrella." (Agency PFF ¶ 173.) The agency's factual findings rely solely on the testimony of William Turner, a former Dentsply low-level manager principally responsible for journal advertising, as the basis to conclude that Dentsply's prices are 10%-15% above its rivals. (Agency PFF ¶¶ 174-76.) A comparison of Dentsply's, Vident's and Ivoclar's actual price lists shows that Dentsply is not the price leader. Since 1996, the first full year of its introduction,

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Dentsply's Portrait tooth line consistently has been priced approximately midway between Vita's and Ivoclar's premium tooth lines. (DX511, DX512, DX513.)³⁰ In 1996, the price of an anterior 1x6 tooth card for Vita Vitapan was \$29.85, Dentsply's Portrait was \$26.95, and Ivoclar Vivodent PE Hardened Acrylic was \$24.05. In 1997, Vita Vitapan was priced at \$30.45, Dentsply's Portrait was priced at \$27.75, and Ivoclar Vivodent PE Hardened Acrylic was priced at \$25.05. In 1998, Vita Vitapan was priced at \$31.65 and Dentsply's Portrait was priced at \$28.45.³¹ In 1999, Vita Vitapan was priced at \$32.91, Dentsply's Portrait was priced at \$29.15, and Vivodent PE Hardened Acrylic was priced at \$26.60. (DX511, DX512, DX513; *see generally* DX1598)

271. Moreover, since as early as 1989, Dentsply has offered lower-priced premium teeth than Vita and Ivoclar for most of its lines of teeth. (*Compare* DX511 (Summary of Trubyte Prices) *with* DX512 (Summary of Vita Price Lists) and DX513 (Summary of Ivoclar Price Lists).) For instance, between 1992 and 1995, prior to Dentsply's introduction of Portrait, Dentsply's best-selling premium tooth, Bioform IPN, Dentsply's "workhorse" tooth, was priced closely to Vita's and Ivoclar's hardened plastic teeth. (Tr. 2110 Jenson; DX511, DX512, DX513.) In 1993, the suggested lab price for a Bioform IPN 1x6 anterior tooth card was \$21.05, which was just slightly above Ivoclar Vivodent PE 1x6 anterior at \$20.76, and below Vitapan 1x6 anterior at \$21.59. (DX511, DX512, DX513.) Since 1996, subsequent to the introduction of Portrait, Bioform IPN has been priced at parity with Ivoclar's comparable Vivodent PE tooth line, and between \$4.00 and \$5.00 below Vita's comparable Vitapan tooth. (DX511, DX512, DX513)

³⁰ All prices for Vita teeth reflect Vident's lowest "Discounted Lab Price." (DX512.) During the relevant period the discount ranged between 35% and 45% of Vident's suggested retail price. (DX512.) Vident also has priced Vita teeth to labs at a lesser discount, *i.e.*, higher price, in the range of 25% to 27% off the suggested retail price. (DX512.)

³¹ Because discovery in this case concluded in early 2000, competitive price lists are available only through 1999. Also, Dentsply has no pricing data for Ivoclar for 1998, because no price list was provided for that year.

comparing anterior 1x6 tooth cards.) Moreover, this pricing comparison takes into account Dentsply's suggested lab price rate, but does not factor in the evidence of vigorous intrabrand competition resulting in wide spread discounting below the suggested lab rate that typifies the pricing practices of Trubyte dealers. Nor does this comparison take into account Dentsply's extensive promotional discount and rebate programs. There is no evidence of similar wide spread Ivoclar and Vident discounting from their suggested lab rates.

272. Mr. Turner's testimony characterizing Dentsply's premium teeth as priced higher than Vita and Ivoclar was accurate to the extent it concerned Dentsply's Trublend SLM tooth. Trublend SLM, though, is a far superior tooth in terms of wear-resistance to any tooth that Vita or Ivoclar offers. (Tr. 2488-90 Clark.) Trublend SLM is the only tooth with a lifetime guarantee for stain resistance, wear resistance and fracture. (Tr. 2491 Clark.) Moreover, Trublend SLM is not a mainstream tooth, it is a "niche" product that tends to be used by dentists involved with implants and high-end dentistry. (Tr. 2491-92 Clark.) For all other Trubyte premium teeth, Mr. Turner's testimony is contradicted by Dentsply's, Vita's, and Ivoclar's contemporaneous price lists.

D. Dentsply's Dealer Network Is Characterized By Vigorous Intrabrand Competition

273. Dealers compete with one another to sell Trubyte teeth to dental labs. (Tr. 94, 129, 137-38 Weinstock; Tr. 2189-90 Jenson.) Intrabrand competition is "common in the industry." (Tr. 1398-99 Kashfian.) Trubyte dealers engage in price competition to gain dental labs' tooth business. (Tr. 2189-90 Jenson.) As a result of this competition, most dealers discount Trubyte's suggested lab price for artificial teeth. (Tr. 2189 Jenson.)

274. Thomas Cavanagh of Frink Dental Supply testified that labs are “price sensitive,” and Frink faced price competition from other Trubyte dealers. (Tr. 4365 Cavanagh.) Frink’s price competition came from Zahn Dental Supply, Jan Dental Supply, Darby Dental Supply, and Precision Dental Supply. (Tr. 4365 Cavanagh.) As Mr. Cavanagh testified, these Trubyte dealers were “driving prices down on teeth” in the market. (Tr. 4367 Cavanagh.) Frink either had to match the price discounts offered by competitive Trubyte dealers or lose its lab customers’ business. (Tr. 4366-67 Cavanagh.) Mr. Cavanagh believed that Frink would lose business to price discounting by other Trubyte dealers, even though these dealers did not have a sales force comparable to Frink, and could not provide the same level of service to dental labs that Frink could provide. (Tr. 4367-68 Cavanagh.)

275. In addition to Frink, other market participants elaborated on the substantial intrabrand competition that occurs among Trubyte dealers. Regis Vetrano of DLDS testified that DLDS competes against multiple Trubyte dealers including Zahn, Darby, DTS and Pearson. (Tr. 1430-31 Vetrano.) Sidney Nordhauser of Darby Dental Supply testified that “[e]very supply house that is out there is our competitor.” (Tr. 3429-30 Nordhauser.) Gerry Mariacher of National Dentex testified that 33 of the 34 National Dentex labs across the country historically purchased their Trubyte teeth from four or five different Trubyte dealers. (Tr. 2951-52 Mariacher.)

276. Price is one of the reasons that labs utilize more than one dealer. (Tr. 1432-33 Vetrano; Tr. 2005 Jaslow (“whoever has the cheapest price has the order”).)³²

³² See also Tr. 656-57 Harris (“The business market has shown me recently that price matters, and customer service doesn’t matter as much any more. The price is a very dominating factor.”); Tr. 3277-78, 86 Langer (price “had a lot to do” with decision to switch from Patterson to DLDS; lab price-shops among dealers in choosing suppliers; lab has to be price driven in this market today); Tr. 4369 Cavanagh (price a more significant factor than service in choosing supplier from which lab will make its purchases); Tr. 4174-75, 4177 Boshoven (price important factor in choosing supplier, both for merchandise and teeth); Tr. 4373-74 Desportes (“most of the lab activity we see is on a price basis”).

Mr. Vetrano testified that if DLDS did not sell to at that price, he believes that would look to another dealer for its tooth purchases. (Tr. 1433 Vetrano.) Price also constitutes a factor in Darby losing business to competitors. (Tr. 3427-28 Nordhauser.) Darby's competitors discount off Dentsply's suggested lab rate for artificial teeth, and therefore, "to beat competition" Darby "discount[s] almost everything [they] sell." (Tr. 3430 Nordhauser.) Atlanta Dental Supply lost the tooth business of labs due to price competition from Darby and Thompson Dental Supply. (Tr. 654-55, 657 Harris.) According to Mr. Mariacher, Zahn aggressively competed with other Trubyte dealers on a price-basis for National Dentex's tooth business. (Tr. 2952-53 Mariacher.) By offering National Dentex a 20% discount below Zahn's catalog price, Zahn was able to win all of National Dentex's Trubyte business, with the exception of one lab. (Tr. 2951-53 Mariacher.)

E. There Is No Evidence That Dentsply's Profit Margins Are Above Some Competitive Benchmark

277.

He characterized these margins as "high." (Tr. 1473-74 Reitman.) On cross-examination, Dr. Reitman conceded that the tooth market is one in which there are substantial marketing and selling expenses associated with the tooth products. (Tr. 1557 Reitman.) Both Dr. Reitman and Dr. Marvel testified that gross margins generally are higher in markets with substantial marketing and selling expenses. (Tr. 1557 Reitman; Tr. 3640-41 Marvel.)

278. Dr. Reitman made no attempt to compare Dentsply's gross profit margins and competitors' margins in the tooth market. (Tr. 1555-57 Reitman.)

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There is no evidence in the record concerning the gross profit margins earned by Ivoclar, Ivoclar Vivadent AG, Vita, Universal, or Schottlander. The agency compares Dentsply's gross profit margins on teeth with its profit margin on merchandise products. (Agency PFF ¶ 183.) Merchandise products are commodities subject to different post-sale costs than teeth (*e.g.*, costs associated with handling returns of 30% of all teeth Dentsply sells).

279. Dr. Reitman conceded that the fact that a company is highly profitable is not, in and of itself, an indication of monopoly power. (Tr. 1560-61 Reitman.)

280. The agency's pejorative characterization of Dentsply as a cash cow business is unwarranted and meaningless.

Mr. Clark introduced "cash cow" into Dentsply's lexicon to describe the Trubyte Division. Mr. Clark learned the term cash cow while attending Columbia University business school. (Tr. 2605 Clark; DX1595.) The term is derived from a Boston Consulting Group ("BCG") analysis categorizing businesses utilizing two criteria: (1) relative growth of the market in which a business operates, and (2) the business's market share relative to competition. (Tr. 2605 Clark; DX1595.) Under the BCG analysis, a business that has achieved a relatively high market share in a low- or no-growth market is deemed a "cash cow." (Tr. 2606 Clark; DX1595.) Mr. Clark testified that, in accordance with his understanding of the BCG analysis, firms invest in cash cow businesses in order to milk them so that they continue to give profits back to the corporation. (Tr. 2606 Clark.)

281. Mr. Clark analyzed Dentsply's artificial tooth business relative to market conditions, and identified the "basic parameters upon which [the Trubyte Division] need[ed] to operate in order to continue to be as successful" as it had been. (Tr. 2607 Clark.) Mr. Clark reduced these parameters to writing in a memorandum entitled

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"Sales/Distribution Principles for Cash Cow Business" (GX171), which he used in connection with his quarterly operations review with John Weiland, Senior Vice President of Dentsply's North American operations. (Tr. 2607 Clark.) In the memorandum, Mr. Clark identified, among others, the following two principles necessary to the successful operation of Dentsply's artificial tooth business in a no growth market:

- Service is crucial – cannot allow competition to gain toehold via poor services (either from us or from dealers).
 - Implications for Trubyte service levels.
 - Reward/punish dealers based on their level of customer service?
- Block competitive distribution points. Do not allow competition to achieve toeholds in dealers.
 - Tie up dealers.
 - Do not 'free up' key players.

(GX171) (emphasis original.) Mr. Clark testified concerning the by-play underlying these two principles. (Tr. 2607-09 Clark.) Because the Trubyte Division operated in a cash cow situation (high market share business in a low or no growth market), Dentsply needed to fully leverage the investments it has made in the business. (Tr. 2608 Clark.) Dentsply made significant investments in creating demand for Trubyte teeth, branding its dealers, and establishing them as players in the artificial tooth market. (Tr. 2608-09 Clark.) Dentsply did not want to open up Trubyte dealers to competitors to allow them to free-ride on Trubyte's demand generating efforts. (Tr. 2609 Clark.)

282. Mr. Clark further testified that the last thing a firm wants to do in a cash cow situation is to give its customers a good reason to move away from the firm to its competitors. (Tr. 2608 Clark.) In a stagnant market, Dentsply would not be able to recoup these lost sales through new customers. Because large labs make no distinction between service provided by Dentsply or the dealer, they view effective service as Dentsply's responsibility. (Tr. 2608 Clark.) In general, dealers were undercapitalized.

(Tr. 2609 Clark.) If dealers brought in competitive teeth, they would not increase total inventory but rather split their inventory investment between Trubyte and competitors. (Tr. 2609 Clark.) Lack of sufficient inventory would further erode the dealers' service levels, and would give Dentsply's customers a reason to move away from Trubyte teeth to competitive products. (Tr. 2609 Clark.)

F. Dentsply's Market Share On A Unit Basis Is Stagnant Or Declining

283. The prefabricated artificial tooth market has been relatively stagnant over the past ten years; consequently, manufacturers and new entrants have been able to grow their business only at the expense of their rivals' share.

284.

285. Dr. Reitman identified Dentsply's "persistent high market share" as one basis for his opinion that Dentsply has monopoly power. (Tr. 1473 Reitman.) Specifically, he testified that Dentsply maintained a market share of 70%-80% based on the dollar volume of Dentsply's sales. (Tr. 1471-72 Reitman.)

286. The tooth market can be divided into premium, mid-line or mid-range, and economy segments corresponding to the attributes of different types of teeth. (Tr. 2105-06, 2115-19 Jenson; Tr. 81-83 Weinstock; Tr. 1549, 1551 Reitman.) Artificial tooth customers distinguish among tooth brands based upon their advantages for use in particular market segments. (Tr. 2119 Jenson.) For instance, managed care dentistry tends to seek out and utilize inexpensive economy teeth. (Tr. 2801-02 DiBlasi.) Some

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labs use economy lines of teeth for their base denture. (Tr. 2023 Jaslow.) Participants in high-end, aesthetic dentistry utilize highly aesthetic, highly wear-resistant premium teeth. (Tr. 3256 Langer (fabricates only premium dentures using "high-end teeth, best wear, best aesthetics"); Tr. 2491-92 Clark (Trublend SLM was niche product used in "high end dentistry").) Dentsply offers tooth lines that compete in each of these segments of the market. (Tr. 2108, 2116-18 Jenson; Tr. 1549 Reitman.) Dentsply offers teeth in all three segments in order to satisfy market demand and meet the needs of customers in each segment. (Tr. 2119 Jenson.) Ivoclar and Vita do not sell teeth in the economy segment, and Vita does not sell any teeth in the mid-line segment. (Tr. 1549-50 Reitman.)

287. Dr. Reitman recognized that Dentsply's market share differs in each of the premium, mid-line and economy segments of the tooth market. (Tr. 1550 Reitman.) On cross-examination, Dr. Reitman acknowledged that Dentsply tracks its performance versus the performance of its competitors on both a dollar volume basis and a unit volume basis. (Tr. 1548 Reitman.) Dr. Reitman also agreed on cross-examination that Dentsply's unit volume share is "substantially lower" than its dollar volume share of the tooth market. (Tr. 1554 Reitman.)

288.

in part, to the competitive entries in 2000 of Heraeus Kulzer and Leach and Dillon and to Ivoclar's "more aggressive" presence in the market. (Tr. 2098 Jenson.)

, Trubyte increased its rebate to National Dentex by 1% on purchases National

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Dentex makes as part of the Preferred Laboratory Program. (Tr. 2311-13 Jenson; Tr. 2943-45 Mariacher; *compare* DX1213 with DX101.) Additionally, Heraeus observed a “noticeable” increase of Trubyte advertisements in direct response to Heraeus’s entry into the U.S. tooth market. (Tr. 1870-71 Becker.)

G. Level Of Success Of Vita and Ivoclar Is Due To Their Own Business Decisions

1. Marketing Focus On Crowns and Bridges, Not Teeth

289.

290. Vident always has lacked a dedicated tooth sales force. Vident’s outside sales force consists of . sales representatives. (Tr. 296 Whitehill.)

Vident’s President testified that Dentsply’s Trubyte sales force that is dedicated to supporting artificial teeth

directed its sales representatives to concentrate on teeth, it realized an increase in tooth sales. (Tr. 297-98 Whitehill.) Nonetheless, Vident’s sales representatives today split their time among of fixed and removable restorative products sold to dental

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labs. (Tr. 297 Whitehill.) As of 1999,

291. For many years Ivoclar simply did not utilize enough sales representatives to promote teeth. (Tr. 1996 Jaslow (no Ivoclar rep calls on lab); Tr. 3320 Coykendall (lab does not see an Ivoclar representative); In 1988 and 1989, when Ivoclar experimented with selling teeth through Frink Dental Supply, Ivoclar did not have enough sales representatives to support tooth sales through Frink. (Tr. 1047-48 Ganley; DX15.)

292. Throughout the 1990s Ivoclar borrowed Vident's strategy and did not employ any sales representatives that were dedicated specifically to selling and promoting artificial teeth. (Tr. 1017-18 Ganley.) Instead, Ivoclar's sales representatives were responsible for selling both crown and bridge products and artificial teeth. (Tr. 1018 Ganley; Tr. 3462 Miles (Ivoclar's market share has remained stagnant due to "lack of focus by Ivoclar on the artificial tooth market business in the United States").) Ivoclar's President recognized in 1996 that his sales representatives focused most of their time promoting crown and bridge products, such as Ivoclar's IPS Empress and Concept porcelain systems, due to the beneficial commission formula. (Tr. 1073-77 Ganley; Because of the way Ivoclar's sales representatives allocated their time, they had very little time to promote all other products, including teeth.

293. Those lab customers of Ivoclar who testified at trial agree that Ivoclar has marketed its crown and bridge products at the expense of artificial teeth. (Tr. 2842,

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2845 Challoner (much more promotion on crown and bridge); Tr. 3268-69 Langer (Ivoclar representative primarily discusses crown and bridge); Tr. 2731 Obst (relationship with Ivoclar focused on porcelain); Tr. 2351 Armstrong (Ivoclar booth at Kentucky State Dental Association show displayed just non-tooth products).) Additionally, Ivoclar does not provide on-site technical training, technical assistance and educational programs to dental lab denture technicians. (Tr. 1996-97 Jaslow; Tr. 3269 Langer.) Nor does Ivoclar co-sponsor on-site clinics or seminars. (Tr. 1997 Jaslow.)

2. European Moulds/Poor Tooth Quality

a. Ivoclar

294. Ivoclar's President testified that the European mould and full ridge lap design of its artificial teeth have been two of the chief obstacles to Ivoclar increasing its market share in the U.S. market for artificial teeth. (Tr. 1119-20 Ganley;

Ivoclar's ridge lap design represents a full lingual contour. The lingual contour is the inside of the tooth that has contact with the tongue. (Tr. 1090 Ganley). Ivoclar teeth traditionally have been distinguishable from other tooth lines due to their ridge lap design. (Tr. 1015, 1086-87 Ganley.) Ivoclar's "full" ridge lap, the portion of the tooth that is processed within the denture base, is larger and more extended than that of other tooth brands. (Tr. 1014-15 Ganley.) Mr. Ganley agreed

For years Gerry Mariacher of National Dentex told Mr. Ganley, Ivoclar's President, that Ivoclar did not have a suitable tooth to sell in the U.S. (Tr. 2910-11 Mariacher.) ("I always told them they didn't have a tooth that was good for the American Market. And [Mr. Ganley] concurred.") Ivoclar, though, failed to alter its tooth offering. (Tr. 2910-11 Mariacher; Tr. 1086 Ganley.)

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295. The full ridge lap design creates difficulties setting the Ivoclar teeth in the denture base material.

Labs must grind the ridge lap down to set the teeth. (Tr. 2907-08 Mariacher (Ivoclar teeth have appearance of "sugar cubes" that technicians must grind away);

; Tr. 1015, 1087 Ganley; Tr. 2854-55 Challoner.) Accordingly, this grinding adds additional labor for the denture technician and, in turn, additional cost to the consumer. (Tr. 1087-88 Ganley; Tr. 2855 Challoner.) Labor is a lab's largest cost in fabricating a denture. (Tr. 2855 Challoner (labor is 57% of lab's cost of denture); Tr. 2925 Mariacher (50% of labs' sales revenue goes to labor costs).) Additionally, a dental lab wastes more materials when it must grind on a tooth than when it does not. (Tr. 2925-26 Mariacher.) It follows that the less time a dental lab spends grinding artificial teeth, the more profitable the lab will be. (Tr. 2000 Jaslow; Tr. 1088 Ganley.)

296. Finally, in 2002, Ivoclar introduced new artificial tooth moulds called Ortholingual and Orthoplane. (Tr. 1090-91 Ganley). After examining the new lines, Mr. Mariacher of National Dentex informed Mr. Ganley that Ivoclar finally had addressed the problem with its teeth. (Tr. 2905-06 Mariacher ("[y]ou finally have it. Actually, Bobby, you finally have a tooth I'll buy from you").) This product introduction was a response to long-standing complaints by American lab technicians concerning Ivoclar's European tooth moulds. ; Tr. 1088 Ganley.) Mr. Ganley testified that the purpose of introducing these two lines was to participate in an aspect of the market that it did not previously participate in. (Tr. 1086, Ganley).

297. These two new lines of Ivoclar teeth have been well received by labs. (Tr. 2911-14 Mariacher (agreeing that Ortholingual and Orthoplane are "selling well already"; most National Dentex labs purchase the lines, with 50% stocking inventories of them; competitive labs "all have very good feelings about these teeth").)

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Ivoclar projects that its sales of ortholingual and Orthoplane will

All other existing Ivoclar tooth lines, though, still are made utilizing European moulds. (Tr. 1091-92 Ganley.) Even the Ortholingual and Orthoplane represented a long-delayed response to market demand.

298. As early as 1995, Ivoclar recognized that dental schools were using flat plane and non-anatomical teeth to teach dental students, yet Ivoclar had only anatomical teeth as part of its tooth offering at the time. (Tr. 1094-96 Ganley; DX231.) Ivoclar recognized it would have an "easier time within the university environment" if it offered a tooth suitable for use with the lingualized occlusion approach. (Tr. 1094-98 Ganley; DX231.)

in 1999 Ivoclar's President Robert Ganley finally authorized development of Ivoclar's new lines. (Tr. 1090-91 Ganley.)

299. ;

Ivoclar teeth incorporated their own unique shading system that largely has been unpopular with dentists who are accustomed to Dentsply's and Vita's shade systems. (Tr. 1995 Jaslow; *see also* Tr. 3463 Miles.) Mr. Jaslow described Ivoclar's unique shade guide system as "confusing" because it uses the exact "opposite" of Vita's letter and number shade designations. (Tr. 1995 Jaslow.) In his view, Ivoclar's shade system makes it difficult for dentists to prescribe Ivoclar teeth. (Tr. 1995 Jaslow; *see also* Tr. 1856-57 Becker (Ivoclar shade system "not widely being used"; it makes Ivoclar's teeth "double-hard to sell").) To date, Ivoclar is the only tooth manufacturer not to offer a tooth in Vita shades; even the two newest market entrants,

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Heraeus Kulzer and Schottlander offer a Vita shaded tooth. (Tr. 1857 Becker; Tr. 4086 Dillon.)

300. Ivoclar teeth tend to “pop” out of denture acrylic. (Tr. 1993-95 Jaslow.) As Mr. Jaslow explained, lab technicians have to drill mechanical retentions or diatorics to keep the Ivoclar teeth in place, and even these are not foolproof. (Tr. 1994-95 Jaslow.) Mr. Mariacher of National Dentex diagrammed for the Court the bulky moulds that Ivoclar uses and the difficulties of using those moulds in the denture fabrication process. (Tr. 2906-09 Mariacher;

; *see also* Tr. 2855 Challoner (Ivoclar teeth look good on tooth card but appear gray in patients’ mouths).)

b. Vita/Vident

301. Like Ivoclar teeth, Vita teeth require a substantial amount of grinding. (Tr. 2924 Mariacher.) As a result, it is difficult for U.S. dental lab technicians to set Vita teeth when fabricating dentures. (Tr. 2924-25 Mariacher.) Mr. Mariacher attributes this tooth grinding problem as well as a lack of advertising on Vident’s part as the principal reasons why there exists limited demand for Vita teeth in the U.S. market. (Tr. 2925-26 Mariacher;

3. Failure To Promote Teeth

302. In the 1990s, Vident and Ivoclar did not adequately invest in promoting their respective artificial tooth lines, resulting in lack of demand for those teeth. (Tr. 1395 Kashfian (Dentsply’s rivals “don’t do anything” to promote teeth); Tr. 2350 Armstrong (neither Ivoclar nor Vita make a market for teeth); Tr. 1855-56 Becker

(Vita does not do a good job marketing teeth.) Myerson LLC, another rival of Dentsply in the artificial tooth market, also failed in the 1990s to create a market for its brand. Myerson President James Swartout conceded that between 1990 and 1993, Myerson/Austenal used no outside sales representatives to promote teeth. In 1994, it used just one. (Tr. 1359-60 Swartout.) Reynolds Challoner of Lord's Dental Studio described Myerson's tooth promotional efforts as "almost nonexistent" (Tr. 2841 Challoner; *see also* Tr. 1997-1998 Jaslow (Myerson does not offer any tooth seminars; Myerson representative does not offer any tooth services); Tr. 2784 DiBlasi (no demand for Myerson Kenson teeth); 3321-22 Coykendall (no demand for Kenson teeth).)

303. As a direct result of Vident and Ivoclar's lack of promotional efforts and other tooth related problems, dental labs and dealers do not experience demand for Vita and Ivoclar teeth in the marketplace.

Tr. 1993-94 Jaslow (has "no call" or demand for Ivoclar teeth); Tr. 2730-31 Obst (no demand for Vita teeth; not enough volume of Ivoclar teeth to justify preferred program); Tr. 2924 Mariacher ("not a large demand" for Vita teeth); Tr. 2350, 2358 Armstrong (Ivoclar and Vita do not "make a market" for their teeth; no demand for Vita and Ivoclar teeth); Tr. 2784 DiBlasi ("no demand" for Ivoclar teeth.) Dr. Armstrong explained that Vita and Ivoclar, unlike Dentsply, do not "[i]nform [their] potential customers that [they] make a particular product," nor do they "inform them as to why it is better ... to use or buy [their] product than the one they are currently buying." (Tr. 2349-50 Armstrong.)

a. Vita

304. Throughout the 1990s, Vita Zahnfabrik hampered Vident's ability to create and sustain market demand for Vita artificial teeth. For example,

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b. Vident

305. For the most part, however, Vident created its own difficulties in increasing demand for Vita teeth. Vident initially committed to Vita to promote its products in order to drive demand for those products. (Tr. 312-13 Whitehill.) But Vident's President testified

Kevin Dillon, Jack Silcox and Jeffrey DiBlasi all testified about Vident's reputation for stealing customers from its dealers. Despite this longstanding problem, Vident testified that it will not continue to distribute teeth directly to dental labs if it can distribute teeth through national dealers. (Tr. 271 Whitehill.)

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307.

Gerry

Mariacher observed that Vident does not spend many dollars marketing their products in trade journals, and does not have anyone on the lecture circuit that speaks exclusively about Vita teeth. (Tr. 2925 Mariacher.)

308. In addition to being burdened with broad product responsibility, Vident's outside sales representatives make infrequent sales calls on denture-focused dental labs. (Tr. 2845 Challoner; Tr. 3264-65 Langer (representative stopped calling on lab after Manager of Removable Department with close ties to Vita left).)³³ When the Vident representatives do make sales calls on dental labs, they focus primarily on promoting Vita's crown and bridge products, not teeth. (Tr. 2845 Challoner; Tr. 3263 Langer.) The representatives do not provide on-site technical training and educational programs to denture lab technicians (Tr. 1992 Jaslow), nor do they provide technical assistance to dental labs (Tr. 1992 Jaslow; Tr. 3264 Langer). Vident also does not sponsor clinics, conventions, seminars or educational programs for dentists in conjunction with dental labs. (Tr. 1992 Jaslow; Tr. 2350-51 Armstrong (Vita did not have a booth at the Kentucky State Dental Association).) Mr. Jaslow summarized the difference between the services offered by his Trubyte sales representative and his Vident representative as "almost like night and day." (Tr. 1992 Jaslow.)

³³ Vident also started to impose a 3% surcharge on payments made with a credit card when Langer Dental Arts' Removable Department Manager left. (Tr. 3266 Langer.)

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309.

310. Vident acknowledges that it is important to increase product awareness among dentists who prescribe dentures (Tr. 320, , and that a prime method of increasing this awareness is to focus on dental schools. (Tr. 320-21 Whitehill.)

c. Ivoclar

311. Like Vita and Vident, Ivoclar's internal business decisions and tooth strategies have resulted in limited demand for Ivoclar artificial teeth in the U.S. market. As early as July 1989, an Ivoclar task force concluded that Ivoclar's brochures, statement stuffers, clinical studies and additional support materials were not sufficient to promote Ivoclar's artificial teeth. (Tr. 1023, 1027-28 Ganley; *see also* Tr. 1994-95 Jaslow (lack of Ivoclar advertising); Tr. 2909 Mariacher (PE teeth "weren't

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advertised as well as other manufacturers' artificial teeth," so "[a] lot of doctors didn't know about them").) The task force also concluded that the lack of a functioning policy or procedure in place for Ivoclar to take back broken sets of teeth from dental labs constituted a major disadvantage for Ivoclar in terms of teeth sales compared to Dentsply. (Tr. 1029 Ganley; ; Tr. 1398 Kashfian (no other manufacturer besides Dentsply takes back broken tooth sets).)

312. As a result of this disparity in the sales representatives' promotional efforts, as early as 1996, Mr. Ganley considered hiring a dedicated artificial tooth sales force. (Tr. 1077-78 Ganley; Ivoclar did not begin to do so until nearly three years later in 1998-99, when it hired former Dentsply representative Herb Baird. (Tr. 1018-19 Ganley.) Ivoclar now maintains just five dedicated tooth sales representatives. (Tr. 1078-79 Ganley.)

313. Ivoclar also engages in "minimal" effort to create demand at the dentist level to drive sales of Ivoclar's teeth (Tr. 2840 Challoner), despite recognizing the need to do so and specifically that labs use the brand of teeth dentists prescribe. (Tr. 1079-80 Ganley.) Ivoclar's President testified that Ivoclar for a long time has been aware of the need to raise dentists' awareness of Ivoclar teeth. (Tr. 1079-80 Ganley.) Nonetheless, Ivoclar sales representatives do not make sales calls on dentists to promote artificial teeth. (Tr. 1080-81 Ganley; Tr. 2840 Challoner.) Ivoclar lost its position as the "primary tooth supplier" with 14 TERC labs because it failed to develop a market for its teeth by promoting them to dentists. (Tr. 2352-55 Armstrong.) In 1999, Ivoclar's marketing budget for all products was

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IV. DENTSPLY MANAGES ITS DEALER NETWORK IN ORDER TO PROTECT THE EXPECTED RETURN ON ITS PROMOTIONAL ACTIVITIES IN THE MARKET AND MAXIMIZE THE POTENTIAL FOR INCREMENTAL SALES GROWTH

A. Dentsply's Dealer Criterion 6 Is A Reasonable, Procompetitive And Economically Sound Business Policy

314. In 1993, David Pohl, Dentsply's National Sales Manager at the time, formalized Dentsply's existing criteria governing its dealers and reduced them to writing. (Tr. 1902-03 Pohl; GX31.) The decision to create a finite set of written criteria was based, in part, on "numerous inquiries from companies seeking to become" dealers of Trubyte Division products. (GX31 at DS22520.) Dentsply distributed its written dealer criteria to all its dealers by letter dated February 16, 1993. (GX31 at DS22520.)

315. In all, Mr. Pohl put ten criteria in writing. (GX31 at DS22521.) These criteria required dealers or prospective dealers to: (1) provide Dentsply with their financial statements; (2) place an initial minimal order of \$50,000 in teeth and \$10,000 in merchandise; (3) place initial orders of \$10,000 if they are merchandise-only dealers; (4) place orders via the Bar Code Entry Order System; (5) submit a written plan which indicates that incremental business will be gained by Dentsply; (6) not add further tooth lines to the product offering; (7) make payment within terms Dentsply specified; (8) re-sell Trubyte products only to end-users such as dental labs, dental schools and dentists; (9) report end-user sales by zip-code on a monthly basis; and (10) limit drop shipments to 10% per quarter. (GX31 at DS22521.)

316. Dentsply required dealers seeking initial recognition to comply with all ten criteria. (GX31 at DS22520.) Dentsply required its existing Trubyte dealers to comply with criteria 6 through 10. (GX31 at 22520.) In full, criterion 6, the one criterion the agency challenges in this litigation, states: "In order to effectively promote

Dentsply/York products, dealers that are recognized as authorized distributors may not add further tooth lines to their product offering.” (GX31 at DS22521.) Though Mr. Pohl reduced criterion 6 to writing, he did not formulate the policy, does not know why it was adopted in the first place, and does not know when the policy started within Dentsply. (Tr. 1902-03 Pohl.)

317. Mr. Miles, who served as Dentsply’s President and Chief Operating Officer in 1990, testified that he does not know who came up with the idea for criterion 6, but knows only that it originated within the Trubyte Division. (Tr. 3509 Miles.) Mr. Miles further testified that he does not know whether the policy embodied in dealer criterion 6 existed prior to 1993. (Tr. 3508 Miles.)

In other

words, no similar policy existed at that time. Mr. Brennan, General Manager of the Trubyte Division from 1986 to 1996 (Tr. 1703-04 Brennan), oversaw the creation of the 1990 Long Range Plan. In 1993, Mr. Brennan made the final decision to issue Dealer Criterion 6. (Tr. 1717-18 Brennan.)

318. The agency asserts that Dentsply has terminated or threatened to terminate dealers for carrying competing lines of teeth since 1976. (Agency PFF ¶ 38.) The agency’s sole purported “factual” evidence for this proposition is the testimony of its own expert, Dr. Reitman, the agency’s own staff economist. (Agency PFF ¶ 38, *citing to* Tr. 1521-22 Reitman.) Mr. Weinstock of Zahn testified that Dentsply did not have a policy similar to Dealer Criterion 6 in place in 1982-83. (Tr. 141 Weinstock.) According to Mr. Weinstock, the absence of such a policy in 1982-83, when Zahn first became a

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Trubyte tooth dealer, is the reason Zahn is able to carry so many competitive tooth brands today. (Tr. 141 Weinstock.) There is no actual fact evidence in the record that Dentsply terminated or threatened to terminate a dealer due to the addition of competitive tooth lines prior to Frink in 1988. As Mr. Brennan testified, Dentsply terminated Frink because it believed Frink's acquisition of the Ivoclar line would cause it to "lose focus" on the Trubyte line. (Tr. 1720 Brennan.) Mr. Brennan did not acknowledge that Dealer Criterion 6 embodies the same policy Dentsply enforced when it terminated Frink. (Tr. 1721-22 Brennan.) There is no evidence that Dentsply's termination of Frink represents enforcement of an "exclusive dealing policy" or is anything other than an ad hoc decision to terminate a single dealer in 1988 based upon that dealer's ability to support multiple tooth lines.

B. Dentsply's Termination Of Dealers For Adding Competitive Tooth Lines, Consideration Of An Exclusive Dealing Policy And Adoption Of Dealer Criterion 6 Coincide With Dental Labs' Growing Influence On The Selection Of Teeth Used For Denture Cases, And Dentsply's Consequent Shift In Promotional Focus From Dentists To Labs

319. Until the mid-1980s, Dentsply's primary promotional vehicle, its sales force, spent most of its time making sales calls on dentists. (Tr. 466-67 Weinstock (as Dentsply sales rep, spent 80% of time calling on dentists; all the sales representatives did the same).) The sales force was engaged in creating pull-through demand for Trubyte teeth primarily at the dentist level. (Tr. 468 Weinstock.) Dentsply as a company was engaged in creating pull-through demand for Trubyte teeth. (Tr. 468 Weinstock.) Beginning around 1985, Dentsply began changing the focus of its promotion from dentists more toward dental labs. (Tr. 468 Weinstock.) Similarly, Dentsply's sales representatives started calling more on dental labs instead of dentists. (Tr. 468-69 Weinstock ("It started happening just about that time in 1985.")) Since that time, the

focus of Dentsply sales representatives has flipped, and they now call mostly on dental labs. (Tr. 469 Weinstock.) During the time Mr. Clark was with Dentsply's Trubyte Division, 1992 through 1999, Dentsply's sales representatives primarily called on dental labs. (Tr. 2545 Clark.)

320.

Throughout the course of the 1990s, Dentsply has invested substantially in pull-through promotion, primarily focused toward dental labs, but also toward dentists and patients, to generate demand for Trubyte teeth. Dentsply's rivals have not done the same.

C. Criterion 6 Is Supported By Economic Theory

321. Exclusive dealing is justified where it is employed to protect manufacturers' demand-generating promotional efforts from competitive free-riding. Dentsply's expert economist, Dr. Howard Marvel, developed the economic theory justifying exclusive dealing as a procompetitive business practice. Dr. Marvel's theory initially was published in 1982 in the *Journal of Law and Economics*. (Tr. 3545-56 Marvel (*see* Marvel, *Exclusive Dealing*, 25 J.L. Econ. 1 (1982)).) Two years later, Dr. Marvel's theory was adopted by Judge Posner in *Roland Mach. Co. v. Dresser Indus., Inc.*, 749 F.2d 380, 395 (7th Cir. 1984). (Tr. 3551 Marvel.) It is cited to and summarized in all the standard graduate and undergraduate industrial organization texts. (Tr. 3551-52

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Marvel.) It has also been cited favorably by Michael Katz, currently Chief Economist for the United States Department of Justice Antitrust Division. (Tr. 3552 Marvel.)

322. As Dr. Marvel explained at trial, exclusive dealing is a common business practice by which a manufacturer or franchisor requires its distributor to carry only the products of that manufacturer. (Tr. 3538 Marvel (“maybe a third or so, according to one estimate, of industrial products, are sold in this way”; exclusive dealing also is “very common” with consumer goods).) It protects the manufacturer’s promotional investments and encourages competition through promotion. (Tr. 3550 Marvel.)

323. When a manufacturer invests in substantial promotion and marketing of its products, its promotion “pulls” the customers into its branded dealers. (Tr. 3546-47 Marvel; DX1671-C.) The manufacturer’s price to dealers reflects the value of the customers pulled through to the dealers. (Tr. 3547-48 Marvel.) A manufacturer engaged in pull-through marketing has higher costs because of the promotion, but also can charge higher prices because of the increased consumer demand for its products created by the promotion. (Tr. 3547-48 Marvel.) Yet, that manufacturer is susceptible to having its investments taken from it by free-riding rivals. (Tr. 3539 Marvel; DX1671-D.) Exclusive dealing creates a property right that protects against free-riding. (Tr. 3539 Marvel; DX1671-B.)

324. By virtue of selling the manufacturer’s product, the dealers are cloaked in the manufacturer’s brand name. (Tr. 3548 Marvel.) The dealers carry the manufacturer’s flag and, as a result, are deemed experts for the particular product. (Tr. 3548 Marvel.) The dealer has the ability to switch its customers from the promoted product to another product by virtue of its status as an expert in the product area. (Tr. 3548-49 Marvel.) The dealer has incentive to switch its customers to a rival brand where

the dealer obtains a higher margin from the sale of a rival product. (Tr. 3549 Marvel.) The rival manufacturer can charge less for its product, and thereby offer a higher margin, because it has not made the promotional investments. (Tr. 3549 Marvel.) It is not required that the rival manufacturer engage in no promotion, only that the rival attempt to free-ride on the bulk of the customers that the first promoting manufacturer is bringing into the dealer by undercutting the promoting manufacturer's prices. (Tr. 3549 Marvel.)

325. Exclusive dealing theory holds that exclusivity arrangements protect a manufacturer's promotional investment from free-riding. Exclusivity functions as a pro-competitive device. (Tr. 3539-42 Marvel; DX1671-E.) It encourages manufacturers to introduce new products and models, to promote new products, and to promote heavily thereby giving consumers more information about the products available to them. (Tr. 3550 Marvel.) Overall, exclusive dealing provides consumers with more choices and better products. (Tr. 3550 Marvel.)

326. As Dr. Marvel's exclusive dealing theory predicts, Dentsply's demand-generating promotional efforts require exclusive dealing to protect against free-riding. Dentsply spends several million dollars annually to create demand for Trubyte artificial teeth at the lab level. (Tr. 2583-84 Clark.) Labs must purchase their Trubyte teeth from an authorized Trubyte tooth dealer. When Dentsply recognizes a tooth dealer, it brands the dealer as a player in the tooth market. (Tr. 2583 Clark.) Trubyte dealers have the ability to switch their Trubyte-using lab customers, brought to them by Dentsply's promotional efforts, to become users of competitive tooth lines that do not engage in the same level of promotion as Dentsply. (Tr. 2584 Clark.) Dentsply uses *Dealer Criterion 6* to protect its promotional investment from free-riding by competitors that offer Trubyte dealers incentives to switch their lab customers over to competitive brands. (Tr. 2584-85 Clark.)

**D. Given The Proper Motive And Opportunity, Dealers
Can Convert Lab Tooth Purchases**

327. Given the proper motive and opportunity, dental dealers will convert a dental lab's artificial tooth of choice from one brand to another.

328. Dentsply's dealers can convert a lab's practice from one brand of tooth to another brand. (Tr. 2199 Jenson.) Dealers' "day-to-day relationships" with labs provide them with the capacity to influence labs to switch between brands. (Tr. 2199 Jenson.) In order to effect this type of brand switching, dealers require a product that can compete against Dentsply's teeth, and require an incentive in the form of higher gross margins, increased commissions, extended payment terms or the like. (Tr. 2199-2200 Jenson; Tr. 1135 Crane.) Historically, competing manufacturers have not offered the types of financial incentives necessary to motivate dealers to switch labs from Trubyte teeth to another brand of teeth. (Tr. 1135-36 Crane.) Dentsply has provided dealers with these types of incentives. When Dentsply has done so, its dealers successfully have switched labs using competing brands of teeth to Trubyte teeth.

329. The record reflects at least eight instances of dealers converting labs to rival brands. (DX1669.) Norman Weinstock, president of Zahn, testified that when Dentsply introduced its Portrait tooth line, Zahn, spurred by the incentive of incremental business, converted Vita and Ivoclar using labs to the Portrait tooth line. (Tr. 528 Weinstock.) Because Zahn was not selling Vita and Ivoclar teeth, the potential to convert Vita and Ivoclar labs represented incremental profit to Zahn. (Tr. 529 Weinstock.)

330. Mr. Weinstock also testified that when Zahn has received increased gross profit by virtue of selling one line of teeth versus another, Zahn has converted its existing lab customers to the higher profit tooth line. (Tr. 529 Weinstock.) Mr. Weinstock testified to the example of trading up labs from mid-range teeth to premium

teeth because Zahn receives more gross-profit dollars on the premium tooth sales. (Tr. 529-30 Weinstock ("I've done that many times."))

331. Mr. Weinstock also testified that Dentsply's Portrait tooth line provided Zahn "more profit" than the Universal tooth lines that Zahn also distributed. (Tr. 533-34 Weinstock.) At the same time, Dentsply offered Zahn spiffs on the sale of Portrait tooth stocks. (Tr. 535 Weinstock.) Spiffs are monetary incentives that manufacturers provide to dealers and dealers' sales representatives for the sale of a particular product. (Tr. 534 Weinstock.) Zahn made Portrait spiffs available to its sales representatives, which created a "big incentive" to convert labs to the Portrait line. (Tr. 535 Weinstock.) Zahn successfully switched labs using Universal teeth to Portrait teeth. (Tr. 532 Weinstock.) Zahn exchanged these labs' Universal tooth stocks for Portrait tooth stocks. (Tr. 532 Weinstock.) Zahn was so successful converting labs from Universal to Portrait that when it returned the teeth to Universal for credit, Zahn's exchange account with Universal grew to exceed Zahn's inventory of Universal teeth. (Tr. 532-33 Weinstock.)

332. Similarly, when Darby Dental Supply took on the Dentsply tooth line, Darby sought to convert its lab customers using American Tooth Industries' Justi teeth and Myerson-Kenson teeth to Dentsply's teeth. (Tr. 4152 Nordhauser.) Sidney Nordhauser, president of Darby, testified that Darby extolled the "benefits" of Trubyte teeth and provided "discounts" to labs in order to facilitate the switch. (Tr. 4152 Nordhauser.) By doing this, Darby was able to switch approximately 50% of its lab customers to Dentsply's teeth. (Tr. 4152-53 Nordhauser.)

333. Ivoclar has employed this precise strategy in the limited circumstances it has had the opportunity to do so. The minutes of Ivoclar's North American Management Board Meeting reveal that, when Frink Dental Supply took on the Ivoclar

line, Ivoclar's "objective" was to have Frink "transfer the Dentsply customer base to Ivoclar." (DX10 at IVC 24182.) Likewise, when Ivoclar began to use DTS as a commissioned agent for the sale of Ivoclar products, Ivoclar attempted to pressure DTS to convert its lab customers for Argon metals to Ivoclar metals. (Tr. 3391-92 Underwood.)

334. It is also the practice of other tooth competitors to rely on dealers to convert labs to their tooth brands. Vident contractually obligates its sub-distributors to convert their lab customers to Vita teeth "whenever possible." (DX5; DX1587.) Horst Becker, president of Heraeus Kulzer's division that sells teeth in the United States, testified that should Heraeus Kulzer gain distribution through Dentsply's dealers, it will rely on the dealers to convert labs to its teeth from competitive brands. (Tr. 1871 Becker.)

335. While Ivoclar and Vident have employed strategies to motivate dealers to switch their lab customers to Ivoclar and Vita teeth, there is no evidence that the grandfathered brands (Myerson, Universal and ATI) ever have done so with respect to the Trubyte dealers that distribute their teeth. There is no evidence that they have provided increased profit margin, pricing discounts, co-marketing support, extended payment terms, or other inducements to motivate Trubyte dealers to favor their tooth lines over Dentsply teeth.

336. Dentsply's dealers' ability to convert labs between tooth brands when motivated by financial incentives is consistent with dental products dealers' ability to do so with respect to various other products. Vito Clavelli, owner and CEO of Tri-State Dental Supply, the New Jersey operatorial dealer seeking to expand into artificial tooth sales, acknowledged that Tri-State's sales of particular brands of products are affected by manufacturer spiffs. (Tr. 3357-58 Clavelli.) When spiff incentives are made

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available to Tri-State sales representatives, the brand subject to the spiff for any given quarter experiences an increase in sales at the expense of Tri-State's sales of competing brands. (Tr. 3358 Clavelli.)

337. In a related practice, Mr. Clavelli converts customers seeking one brand of product to a competing brand in circumstances where Tri-State obtains a higher profit margin from sales of the competing brand. (Tr. 3355-56 Clavelli.) For instance, Mr. Clavelli switches labs seeking to purchase Trubyte curing lights to Kerr Opti-Lux curing lights because the Kerr product is less expensive for Tri-State's customers and generates more profit for Tri-State. (Tr. 3355-57 Clavelli.) Mr. Clavelli attributes his success in converting his customers between brands to his "expertise" and the "trust" that Tri-State's customers have in his dealership. (Tr. 3356-57 Clavelli.)

E. Dentsply Dealer Criterion 5 Is A Commercially Reasonable Business Requirement That Permits Dentsply To Limit The Size Of Its Dealer Network So As To Maintain A Dealer's Incentive To Focus On Dentsply's Product

338. Dentsply published Dealer Criterion 5 in writing in February 1993, at the same time as it initially published Dealer Criterion 6. (GX31.) Criterion 5 states that "[c]ompanies applying for recognition as a [Trubyte] dealer must submit a written plan which indicates that incremental business will be gained by Dentsply." (GX31.) By incremental business, Dentsply required dealers to demonstrate that they would bring business to Dentsply that Dentsply did not already enjoy. (Tr. 1926 Pohl; Tr. 2580 Clark ("they needed to demonstrate to us that they were going to increase the pie of Trubyte teeth being sold nationwide").) At trial, Mr. Pohl provided the Court with an example of the manner which Dentsply applied criterion 5:

[If] you have two dealers, if the two dealers were each purchasing \$200,000 a year in teeth, \$400,000 total in Pittsburgh, if a third dealer wanted to be recognized, it would have to be clear to

Dentsply that the recognition of them would bring them business above and beyond the \$400,000 in this example. That we wouldn't just take \$400,000 and divide it up three ways as opposed to two.

(Tr. 1926 Pohl.)

339. Primarily, dealer applicants are able to demonstrate incremental sales by their ability to convert their existing lab customers from rival tooth brands to Trubyte teeth. (Tr. 2580 Clark; Tr. 1926 Pohl.) Dealer Criterion 5 requires a "written" plan of incrementality, but as Mr. Clark testified, in practice, this requirement often was satisfied verbally. (Tr. 2580 Clark.)

340. Dealer Criterion 5 provides existing dealers with protection on the return of their investment in Trubyte teeth. (Tr. 2579-80 Clark.) In Dentsply's view, dealers that do not realize a sufficient return on their investment are not going to continue to support the Trubyte tooth line. (Tr. 2580 Clark.) Mr. Weinstock testified that Zahn relies on Dentsply's commitment to its dealers that it will not add new dealers unless they can prove they can convert lab customers from rival brands to Trubyte teeth. (Tr. 538 Weinstock.) Mr. Weinstock voiced strong complaints to Dentsply based upon Dealer Criterion 5, when Dentsply recognized J&S Dental Supply in Miami and another new dealer in Maine. (Tr. 538 Weinstock.) These two dealers, though, both sold competitive teeth, they relinquished those competitive lines and sold Trubyte teeth instead. (Tr. 538-41 Weinstock.)

341. Dentsply, routinely, rejects dealers' applications to become authorized Trubyte tooth dealers because they fail to establish incrementality. (Tr. 2581-82 Clark; DX1607; Tr. 1928-30 Pohl; DX110; DX111; Tr. 2285-86 Jenson.) For example, as early as 1994, Dentsply considered the application of Lincoln Dental Supply. (Tr. 1929-30 Pohl; DX707.) Although Dentsply viewed Lincoln as a large mail order dealer, Dentsply denied Lincoln's request to distribute Trubyte teeth because it determined Lincoln would

merely "trade out the existing pie of Trubyte sales with yet another mail order dealer." (Tr. 2581 Clark; Tr. 2777 DiBlasi; Tr. 1929-30 Pohl.) Similarly, Dentsply declined to authorize Jack Silcox as an authorized Trubyte dealer on the basis of criterion 5. (Tr. 2055-56 Silcox; DX275). Most recently, Dentsply rejected Tri-State Dental Supply's efforts to become an authorized Trubyte dealer on the basis of lack of perceived incremental volume, even though Tri-State is an operatorial dealer that, if it cannot obtain Trubyte teeth, is committed to picking up a competitive tooth line. (Tr. 3352-53, 3360-63 Clavelli; DX1620.)

342. Dentsply's application of Dealer Criterion 5 to its dealers authorized during the 1990s demonstrates that dealers can convert their lab customers to different tooth brands. In 1992, Dentsply authorized Jan Dental Supply as a Trubyte tooth dealer. (Tr. 1908-09 Pohl; GX26; GX24.) Prior to taking on the Trubyte line, Jan distributed Vita, Kenson, Dentorium, Justi and Universal teeth. (Tr. 1908 Pohl; GX26.) Jan fulfilled the incrementality requirement of criterion 5 by dropping Vita, Kenson, Dentorium and Justi, and converting its lab customers using those brands to Trubyte teeth. (Tr. 1909-10 Pohl (opening Jan as a Trubyte dealer provided "opportunity to gain incremental market share"); GX24.) In 1994, when Dentsply began discussions to authorize DTS as a Trubyte dealer, it requested that DTS provide information showing its "[a]nnual tooth sales by location." (Tr. 1914-15 Pohl; GX372.) Dentsply obtained information concerning DTS's existing sales of Vita and Ivoclar teeth to learn what it could "expect to pick up in incremental business" if it authorized DTS. (Tr. 1915-18 Pohl; GX61.) DTS was aware of the requirements of Dealer Criterion 5 and was interested in transferring its Vita and Ivoclar business to Trubyte teeth. (Tr. 2637-38 Clark.) The agency's counsel elicited testimony from Mr. Pohl, Dentsply's former Trubyte National Sales Manager, that in authorizing DTS, Dentsply believed that it would pick up over a million dollars worth of DTS's Vita and Ivoclar tooth sales. (Tr. 1917-18 Pohl.)

343. In 1993, Dentsply authorized J&S Dental Supply in Florida and Technical Dental Services in Maine. (Tr. 538-41 Weinstock.) Prior to taking on the Trubyte line J&S Dental distributed Universal teeth. J&S was able to satisfy criterion 5's incrementality requirement, in part, by terminating its distribution of Universal teeth. (Tr. 538, 540-41 Weinstock.) J&S also was expected to acquire a portion of HealthCo's Trubyte business, after HealthCo went bankrupt, that otherwise would have gone to competitive manufacturers. TDS in Maine sold Justi teeth, and substituted the Trubyte line for the Justi line. (Tr. 539-40 Weinstock.)

344. In 1995, Dentsply fully re-authorized Darby Dental Supply as a Trubyte dealer. Prior to re-authorization, Darby carried several competitive tooth brands, including Ortholux, Justi, Kenson, Nordent, Duratone and Odipal (Tr. 4120-22, 4144 Nordhauser.) Darby satisfied criterion 5 by demonstrating it could convert its labs using these competitive brands to Trubyte teeth. Darby proved largely successful in following through with the conversions.

V. THE TRIAL RECORD FAILS TO LINK ANY PLAUSIBLE, MATERIAL ANTI-COMPETITIVE EFFECT IN THE ARTIFICIAL TOOTH MARKET TO DENTSPLY'S DISTRIBUTION POLICY

345. The agency's survey of dental labs purports to show the effect of brand and distribution options on price. (GX140.) In theory, the survey is meant to predict the respondents' purchases of artificial teeth over a three-month period. (Tr. 1607 Reitman.)

A. Dr. Wind's Lack Of Involvement In Design And Execution Of The Agency's Survey

346. The agency retained Professor Yoram Jerry Wind of Wind Associates to design and conduct a survey of dental labs. Prof. Wind conceded at trial that he actually played a limited role in conducting and executing the survey. (Tr. 819-20

Wind.) Prof. Wind made few decisions in the design of the survey questionnaire. He relied on Dr. Reitman and the agency's lead trial counsel, William Berlin, as the principal questionnaire designers. (Tr. 812, 815-16 Wind.) Dr. Reitman designed the survey and formulated the survey questions. (Tr. 1539, 1601 Reitman; Tr. 822-23 Wind.) Dr. Reitman and Mr. Berlin provided Prof. Wind with pricing and distribution options that underlie the stimuli scenario cards. (Tr. 1602 Reitman.) They told him what brands of teeth to include on the cards. (Tr. 830 Wind.) They also led him to omit a local dealer option for Vitapan teeth. (Tr. 860-62 Wind.) At the time, Vident and 20 sub-distributors located throughout the country distributed Vita teeth.

347. Prof. Wind was not involved in the collection of survey data. Wind Associates subcontracted the collection of survey data to Guideline Research, which in turn subcontracted the work to a company called TMR. TMR conducted the actual telephone interviews of lab respondents. (Tr. 805-06 Wind.) Prof. Wind did not train interviewers, create training materials or review written materials used for training. Guideline Research trained TMR's supervisors, and TMR trained the interviewers. (Tr. 806, 808 Wind.) Prof. Wind was not involved in monitoring the interview process. TMR monitored the interviews. (Tr. 809, 817 Wind.) During the survey process, Prof. Wind did not know the percentage of lab interviews, if any, that TMR monitored. (Tr. 811 Wind.) Prof. Wind did not review any completed questionnaires during the survey process,³⁴ and performed no interview validation. (Tr. 811 Wind.)

348. Prof. Wind was not involved with creating or analyzing the data set. Guideline Research compiled and input the response data to create cross-tabs and data tapes. (Tr. 809-10 Wind.) Prof. Wind did not analyze the response data, nor did he

³⁴ Prof. Wind had not reviewed a completed interview questionnaire at the time of his deposition in 2000, but did manage to review a "sample" prior to his trial testimony. (Tr. 809 Wind.)

analyze the survey data. Prof. Wind retained Abba Krieger, a university colleague, to run a PRIDEM model to analyze the survey data. (Tr. 805, 810 Wind.)

**B. The Design Of The Survey Was Far Too Complicated
And Confusing**

349. Dentsply retained Dr. Peter Rossi to review the design and execution of the agency's survey, as well as to evaluate and critique the analysis of the survey data performed by Prof. Wind's associates and Dr. Reitman. (Tr. 2998 Rossi.) Dr. Rossi is the Joseph T. Louis Professor of Marketing and Statistics at the Graduate School of Business, University of Chicago. (DX1622 (Curriculum Vitae of Dr. Rossi; Tr. 2981-82 Rossi.) He holds a Ph.D in econometrics. (DX1622; Tr. 2983 Rossi.) Econometrics is the application of statistical methods to the measurement of economic phenomena. (Tr. 2983 Rossi.)

350. Dr. Rossi serves as a member of the Editorial Board of *Marketing Science* and the *Journal of Marketing Research*. (DX1622; Tr. 2986.) He is a former Associate Editor of the *Journal of American Statistical Association*, *The Journal of Econometrics*, and *Journal of Business and Economic Statistics*. (DX1622; Tr. 2986.) Dr. Rossi is the founder of the newly established journal *Quantitative Marketing and Economics*. (DX1622; Tr. 2986 Rossi.)

351. Dr. Rossi acts as a referee for *The Journal of Marketing Research*, *Marketing Science*, *The Journal of Political Economy*, *American Economic Review*, the *Review of Economic Studies*, the *Journal of the Royal Statistical Society*, *Biometrika*, *Marketing Letters*, *Economic Letters*, the *Quarterly Journal of Economics*, and *The Journal of Industrial Organization*, *The Journal of Industrial Economics*, and *The Rand Journal of Economics*. (DX1622; Tr. 2987 Rossi.)

352. Dr. Rossi has authored the following articles, among others, that bear on his expert opinion in this case: *Overcoming Scale Usage Heterogeneity; a Bayesian Hierarchical Approach*, with G. Allenby and Z. Gilula, 96 JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION 20 (2001); *Bayesian Analysis of the Multinomial Probit Model with Fully Identified Parameters*, with R. McCulloch, 99 JOURNAL OF ECONOMETRICS 173 (2000); *Statistics and Marketing*, with Greg Allenby, JOURNAL OF THE AMERICAN STATISTICAL ASSOCIATION 635 (2000); *Marketing Models of Consumer Heterogeneity*, with Greg Allenby, JOURNAL OF ECONOMETRICS 57 (1999); *Bayesian Analysis of Multinomial Probit Model*, forthcoming, SIMULATION-BASED INFERENCE IN ECONOMETRICS, (Mariano, Weeks and Schuermann, eds.), Cambridge, Cambridge University (with Rob McCulloch), and *Similarities in Choice Behavior Across Product Categories*, with Andrew Ainslie, 17 MARKETING SCIENCE 91 (1998).

353. Dentsply tendered and the Court accepted Dr. Rossi as an expert witness in the fields of econometrics, survey research and survey design methodology. (Tr. 2997-98 Rossi; DX1622.)

1. The Screening Questionnaire Failed To Identify Desired Respondents

354. The Wind survey contains a screening questionnaire. (Tr. 768-69 Wind; GX140 at Appendix D.) The purpose of the screening questionnaire is “to identify the relevant respondents” by establishing each respondent’s membership in the survey universe. (Tr. 768-69 Wind.) The survey’s parameters define the universe as “dental lab technicians responsible for the selection of plastic artificial teeth *purchased by the lab* for use in making dentures.” (GX140 at 5) (emphasis added.) However, the screening questionnaire does not identify respondents that make artificial tooth purchasing decisions. Instead of asking respondents whether they have “purchasing

responsibility” for the lab, the screening questionnaire asks whether they are “responsible for selecting the plastic artificial teeth [the lab] will use.” (GX140; Tr. 869 Wind.)

355. In the normal course of fabricating a denture, denture lab technicians will “select teeth the lab will use” by taking them from the labs’ tooth inventories and removing them from tooth cards, without making purchasing decisions. (Tr. 1970-71 Jaslow (technician setting teeth does not order the teeth).) Dr. Wind was uncertain whether denture lab technicians normally select teeth from the labs’ inventories and remove them from tooth cards to fabricate dentures. (Tr. 870-71 Wind.) The survey’s screening questionnaire does not distinguish between those technicians that make purchasing decisions, and those that merely select teeth from the labs inventory for use in a particular denture case. (GX140 at Appendix D.) Prof. Wind conceded that if the respondents were not responsible for purchasing teeth for their labs, then “there wouldn’t be a whole lot of significance to what they think” about the point allocations. (Tr. 869 Wind.)

2. The Questionnaire’s Instructions Were Too Complex

356. The complexity of the questionnaire instructions and requested tasks raises concerns over the accuracy of the survey data. The instructions given to the respondents for completing the conjoint exercise were far too lengthy, complicated and difficult to understand. (Tr. 3011-20 Rossi.) These flawed instructions impact the reliability of the survey data because the respondents are unable to understand fully the task presented. (Tr. 3015-16 Rossi.) The survey procedure required the interviewer to read the questionnaire’s instructions to the lab respondents over the telephone. (Tr. 789-90 Wind.) Dr. Rossi demonstrated at trial, by reading aloud, that it would take an interviewer approximately 2-3 minutes to read the instructions to respondents. (Tr. 3012-

13 Rossi.) The respondents were not provided with a written copy of the instructions. (Tr. 3011 Rossi.)

357. The elaborateness of the instructions may have confused the lab respondents. (Tr. 3014, 3016 Rossi.) The interviewers asked respondents to assimilate 55 pieces of information and then allocate 100 "points" across eight different stimuli scenario cards while on the telephone. (GX140, *see* Instructions for Responding to Materials in Envelope B.) The instructions do not explain whether the allocation of points is directed at preference or volume. (Tr. 3014-15 Rossi.) Confusion regarding the task to be performed contributes to measurement error, which, in turn, makes survey data less informative. (Tr. 3016 Rossi.)

C. The Questionnaire Failed To Define Critical Terms

358. The use of undefined terms in the survey renders the results unreliable. The terms "local dealer" and "mail order dealer" are critical to the agency's survey. (Tr. 3003 Rossi.) Prof. Wind used the terms as a measurement of attributes labs value in a distribution network. (Tr. 3006-07 Rossi.) The agency used the results of the survey to predict share shifts and pricing levels in the absence of Dealer Criterion 6. (Tr. 3006-07 Rossi.) In Dr. Rossi's opinion, the term "local dealer" goes to the "very essence" of the matter at issue in the survey. (Tr. 3003 Rossi.) Yet, Dr. Wind did not define the term "local dealer" in the survey. He testified that local dealer means "[w]hatever the respondent will interpret the term local dealer to mean." (Tr. 786 Wind.) According to Prof. Wind, a local dealer could mean a dealer within 10 miles of a lab or 500 miles of a lab or even possibly, though not likely, 1000 miles of a lab. (Tr. 881-82 Wind.) The undefined term "local dealer" in the survey "renders it nearly impossible to interpret the effects" of Dealer Criterion 6. (Tr. 3008-09 Rossi.) By contrast, Dr. Rossi found Prof. Wind's Courtyard by Marriott study to be an example of the use of concrete terms.

Instead of simply using the term "workspace," Prof. Wind provided an actual room layout. (Tr. 3004-06 Rossi.)

359. Dr. Reitman does not dispute that the terms "local dealer" and "mail order" dealer were not defined, and that the definitions were left to the individual perceptions of the lab respondents. (Tr. 1610-12 Reitman.) Dr. Reitman admitted that the term "local dealer" could be interpreted as a separate network of dealers developed by Vita and Ivoclar and not the same dealer outlets where Dentsply teeth are present. (Tr. 1612-13 Reitman.) Dr. Reitman conceded that Zahn would have to be delineated a mail order dealer under the survey if the lab respondent did not believe that Zahn was local. (Tr. 1638-39 Reitman.) Yet, Zahn's own President, Norman Weinstock, does not consider Zahn a mail order dealer. (Tr. 97 Weinstock ("A mail order dealer, absolutely not").)

D. The Execution Of The Survey Did Not Meet Scientific Standards

360. The execution of the agency's survey did not meet the necessary research standards since there was no pre-test, the survey had a low response rate, and the respondents were unable or unwilling to devote the resources to completing the survey correctly. (Tr. 2999, 3021-22 Rossi.) For this reason, Dr. Rossi believes that "virtually all social science researchers who rely on surveys would discount this survey as being unprojectable." (Tr. 3048 Rossi.)

1. There Exists A Substantial Risk Of Non-Response Bias Due To Low Response Rate

361. It is incumbent upon the survey's proponent to prove that non-response bias does not exist where the response rate is below 70 percent. (Tr. 3040 Rossi.) *The Research Manual for Scientific Evidence* instructs that surveys with response

rates below 50% should be regarded with "significant caution" as a basis for precise quantitative statements about the population. (Tr. 3041-43 Rossi.) A response rate below the 50% level serves as a "red flag" that the survey possibly is not projectable. (Tr. 3042 Rossi.) Dr. Rossi explained that "everything that we do in standard statistical inference from computing a simple proportion to these more complicated manipulations that we are doing here involve[s] the notion that what we have is really a random sample, so we can project it." (Tr. 3047 Rossi.) A low response presents a "significant risk" that the sample is not random. (Tr. 3047 Rossi.)

362. The response rate for the agency's survey is below 40%. (Tr. 3034-37 Rossi.) Before sending out the agency's survey, Prof. Wind obtained a list of 10,000 dental labs. (Tr. 762 Wind.) Prof. Wind's "team" initially placed telephone calls to 2520 of these labs. (Tr. 770-71 Wind.) Of these calls, 702 people refused the initial screening or could not be reached. (Tr. 771 Wind.) Of the remaining 1818 eligible people, only 1760 were actual dental labs and of these, only 674 labs actually fabricated dentures using plastic artificial teeth. (Tr. 771-72 Wind.) 667 of the respondents indicated they were responsible for selecting artificial teeth. (Tr. 772 Wind.) 67 of these labs refused to participate in the study, leaving 600 potential labs to participate in the study. (Tr. 772 Wind.) Prof. Wind's staff mailed the surveys to the 600 labs. Of these, 274 labs actually responded. (Tr. 768, 770-73 Wind.) Only 261 labs completed the survey. (Tr. 3034 Rossi.)

363. As Dr. Rossi testified, "[a]ny reasonable researcher has to calculate a response rate." (Tr. 3034 Rossi.) Prof. Wind did not calculate one. (Tr. 3034 Rossi.) Based upon the data provided, Dr. Rossi calculated that the response rate for the agency's survey was approximately 39%. It is likely that the response rate is even lower because some portion of the initial 450 labs that outright refused to participate could have been eligible for the survey. (Tr. 3035-36 Rossi.) The highest possible response rate for the

agency's survey, 39%, raises a serious concern that the survey's sample universe is not representative. (Tr. 3037 Rossi.) A survey that suffers from non-response bias cannot be fixed by any other means than re-doing the entire survey. (Tr. 3050-51 Rossi.)

364. To dispel the risk of non-response bias, Prof. Wind had to establish both that (1) measurable characteristics of non-respondents are similar to those of respondents, and (2) these characteristics are predictive of, or related to, attitudes towards distribution options. (Tr. 3045-46 Rossi.) Prof. Wind could have gathered information concerning the size (*i.e.*, number of technicians) of the non-respondent labs and compared them to the size of the respondent labs, to show that the two groups are comprised of labs with similar characteristics. (Tr. 3045-46 Rossi.) Even if he did this, Prof. Wind also would have had to prove that a lab's size is related to its view on local dealer availability. (Tr. 3046 Rossi.) Prof. Wind failed to gather any information concerning the characteristics of non-responding labs. (Tr. 897-98 Wind; Tr. 3046-47 Rossi.) Instead, Prof. Wind compared the views of respondents that completed the survey upon receiving a \$20 incentive with those that responded late after receiving a \$40 incentive. (Tr. 773, 913 Wind; Tr. 3043-44 Rossi.) He conducted no analysis to determine the extent to which late respondents shared any characteristics or views with non-respondents. (Tr. 913-14 Wind; Tr. 3044-45 Rossi.) Further, he offered no justification for equating respondents who required a higher incentive with non-respondents. (Tr. 913-14 Wind; Tr. 3044-45 Rossi.)

2. The Failure To Conduct A Pre-test Makes The Survey Unreliable

365. The lack of a pre-test to protect against non-response bias or confusion over terms used in the survey renders the results unreliable. A pre-test involves the use of the draft of the survey questionnaire, including instructions and stimuli. (Tr. 3022-23 Rossi.) The survey then is administered to a sub-sample of the target population, which

in this case generally was defined as dental lab technicians responsible for selecting artificial teeth used to fabricate dentures. (Tr. 3022-23 Rossi; GX140.) The survey administrator then reviews the particular questions with the pre-test respondents, as well as definitions of key words. (Tr. 3022-23 Rossi.) The administrator also asks the respondents to paraphrase the survey's instructions in an effort to test the respondents' understanding of the instructions. (Tr. 3022-23 Rossi.) Based on this feedback, the wording and nature of questions and instructions are revised. (Tr. 3022-23 Rossi.) As Prof. Wind testified, "[t]he major reason for a pre-test is to see whether the respondent understands the questions and can answer the questionnaire in a meaningful fashion." (Tr. 824 Wind (acknowledging that a pre-test is used to make sure that "the questions are clear and unambiguous" to the respondents).)

366. The agency's survey was never pre-tested. (Tr. 824 Wind.) Prof. Wind offered the following three explanations at trial for why he performed no pre-testing: (a) he has employed the "same methodology" and "exactly the same wording" in many other studies; (b) the agency informed him that there was not sufficient time to perform a pre-test; and (c) if he had conducted a pre-test, Dentsply would have learned of the agency's intent to conduct the survey. (Tr. 795-796, 826-27 Wind.)³⁵

367. Prof. Wind's excuse that the survey did not require a pre-test because he has used the same methodology in previous conjoint studies is "absolutely not credible." (Tr. 3026-27 Rossi.) Prof. Wind never before has surveyed dental labs and never used these particular attribute levels for dental labs. (Tr. 825, 827-28 Wind.) Prof. Wind never conducted a study with tooth brands or dental lab preferences prior to this study. (Tr. 825 Wind; Tr. 3026-27 Rossi.) As to a lack of sufficient time to conduct a

³⁵ Prof. Wind offered his third justification for the first time at trial. He made no reference to this reason at his deposition despite being questioned on his justification for failing to conduct a pretest. (Tr. 826 Wind.)

pre-test, the agency's survey was conducted in June 1998. The agency did not file the complaint initiating this action until January 1999. (See D.I. 1.). The agency did not provide Prof. Wind's expert report to Dentsply until March 2000. Based upon this sequence, there was "ample time" to delay the survey the few weeks time it would have taken to allow for a pre-test. (Tr. 3029 Rossi.) Also, Prof. Wind offered no explanation why Dentsply would have learned of the survey from the pre-test, but not learned of the survey while the survey itself was ongoing.

368. Prof. Wind testified that he was able to receive the same feedback from execution of the survey in the field that he would have learned from a pre-test. (Tr. 872 Wind.) Prof. Wind asserted that Guideline Research, the firm Dr. Wind subcontracted the responsibility for the interviews (which itself subcontracted the interview function to TMR) monitored 100% of the telephone interviews, and never reported to him any respondent confusion due to the questions. (Tr. 872-73 Wind.) Prof. Wind acknowledged that Guideline Research never reported to him that respondents failed to allocate 100 points across all purchases, even though the completed questionnaires reveal that a substantial percentage of respondents made this error. (Tr. 873-74 Wind.) Prof. Wind testified that this sort of comprehension and response error is not the type of problem that interview monitoring would have observed. Dr. Rossi agreed that the monitoring of interviews serves a completely different function than a pre-test. (Tr. 3027-28 Rossi.)

369. Pre-tests are "absolutely essential" in survey research. (Tr. 3023 Rossi.) Prof. Wind's survey was "the first survey" that Dr. Rossi ever has been exposed to that did not employ a pre-test. (Tr. 3023 Rossi.) At trial, Dr. Rossi read an excerpt on the critical nature of pre-testing written by Prof. Wind's colleague, Dr. Paul Green, at p. 271 of *Research for Marketing Decisions*:

Pre-testing. Pre-testing of questionnaires is a virtual necessity. The only way to gain real assurance that questions are unambiguous is to try them. Pre-testing is almost always done initially by asking proposed questions of associates. To be truly effective, however, pre-testing of questions should be conducted by asking them of a group of respondents who are similar to those who will be interviewed in the final example. It is the rule, rather than the exception, that questions will be revised as a result of pre-testing. Several versions of a question may need to be considered as a result of pre-testing before the final version is decided upon.

(Tr. 3024-25 Rossi.) Prof. Wind hired Dr. Green to assist with the agency's survey. (Tr. 805 Wind.) Dr. Rossi shares Dr. Green's opinion that "pre-testing is a virtual necessity" and that revising questions (and even the interview protocol) as a result of pre-testing is "the rule rather than the exception." (Tr. 3025-26 Rossi.)

370. The design flaws identified in the agency's survey could have been detected and corrected with a pre-test. (Tr. 3023-26 Rossi.) In Dr. Rossi's opinion, a pre-test was even more important for the agency's survey because untrained and inexperienced individuals, namely Dr. Reitman and Mr. Berlin, formulated the survey questions. (Tr. 3030 Rossi.)

3. The Tasks Requested Of Respondents Were Too Complex And Confusing

371. The lack of variation among individual respondent's completed stimuli scenario cards suggests that respondents were unwilling or unable to devote the time necessary to take the survey seriously. The conjoint exercise involved allocating 100 points in each of eight stimuli cards. (Tr. 3052 Rossi.) Dr. Rossi found considerable evidence in the pattern of responses showing that the lab respondents were unable or simply unwilling to provide accurate responses. (Tr. 3051-52 Rossi.) For example, some respondents returned less than all eight scenario cards. (Tr. 3035 Rossi.) In half of the cards, labs did not seem to care about huge variations in price and distribution options. One-half of the respondents did not vary their points across the eight cards—even though

prices declined dramatically on some of the cards. (Tr. 3052-53 Rossi.) Because these responses run counter to other evidence that labs are extremely price-sensitive, Dr. Rossi believes that the labs did not complete the requested task seriously. (Tr. 3052-55.) Prof. Wind testified that even though 48% of respondents did not vary their market share allocation, he still used this data because it could reflect brand loyalty. (Tr. 886-88 Wind.) Dr. Rossi observed that such extreme brand loyalty, *i.e.*, respondents are so wed to particular brands regardless of price differences, would likely result in these respondents allocating a large fraction of points to a particular brand. (Tr. 3055-56 Rossi.) The fairly even distribution of points across brands by these respondents is inconsistent with Prof. Wind's extreme brand loyalty theory. (Tr. 3055-56 Rossi.)

372. Dr. Rossi found other evidence that lab respondents were unable or unwilling to take the survey seriously. Some respondents may have randomly allocated shares instead of providing accurate responses. (Tr. 3056-59 Rossi.) Nineteen respondents varied by 90 points their preference for a brand from one card to another. (Tr. 3057-58 Rossi.) Twenty-nine percent of respondents had allocations that changed by more than 75 points their preference for a brand from one card to another. (Tr. 3058 Rossi.) In sum, well over half of the respondents provided responses that, in Dr. Rossi's opinion, any reasonable person would find did not reflect any serious effort or true preference. (Tr. 3059 Rossi.)

373. Guideline Research engaged in the widespread practice of editing scenario cards that did not total 100 Points and using those edited cards as data. For those cards that did not add up to 100 points, Guideline Research interviewer, Tiffany Wigley, changed the points on the completed cards. (Tr. 888-89 Wind; Tr. 458-73 Reitman.) For each of these cards, Ms. Wigley was the callback interviewer. She edited all the cards in the same manner, using a double back-slash to cross out the respondents'

point allocations, and inserting her own. The agency relied on the data from these survey cards. (Tr. 4055-56 Reitman.)

374. On the scenario cards filled out by James Pierce of Pierce Dental Lab (questionnaire no. 039), Mr. Pierce did not allocate a total of 100 points for each of the eight cards. (DX1676.) Instead, Mr. Pierce allocated 50 points on six cards, 90 points on one card, and 100 points on just one card. (DX1676.) Each of Mr. Pierce's responses that totaled less than 100 points were crossed out and then reallocated to add to 100 points. On two cards for which Pierce's point allocations added to 50 points instead of 100, he wrote in "Justi Imperial x 50%" and "Imperial." (DX1676 (cards C010, C141).) There is no option for Justi Imperial teeth on any of the cards. Ms. Wigley crossed out the "50%," and doubled the other point values. (DX1676 (cards C010, C141).)

375. On the bottom of the first scenario card filled out by Mark Gonzales of Gnathic Arts Dental Lab (questionnaire no. 438) card Mr. Gonzales wrote: "This is too confusing. I smell monomer every day and my brain is dull. Don't bother me anymore. Thanks." (DX1677 (card C141).) Mr. Gonzales completed the first two cards using point values that are illegible. Ms. Wigley crossed out each of the point values Mr. Gonzales assigned and changed them to total 100. (DX1677 (cards C121, C141).) On the third card, Mr. Gonzales did not assign any point values, but rather inserted items of artwork such as a peace sign, a horse, a stick figure of a person, a cat, a large snail and a bicycle. (DX1677 (card C123).) Mr. Gonzales gave up after card three. Mr. Gonzales left cards four through eight blank. (DX1676.) The agency used the cards that Mr. Gonzales completed.

376. The scenario cards filled out by Judith M. Tucker/Walt Krishner (questionnaire no. 174) were not completed according to the instructions. Either Ms. Tucker or Mr. Krishner changed the pricing levels of the Dentsply Bioform IPN,

Bioblend IPN, and Classic teeth on the initial card. One of them then allocated points totaling 150 points on the initial card, and 176 points on the second card. (DX1678.) Ms. Wigley changed these answers. (DX1678.)

377. Laszlo Schweitzer of Schweitzer Dental Lab completed questionnaire no. 192. (DX1679.) On cards C056, C050 and C055, Mr. Schweitzer's point allocations totaled 98, 103 and 95. (DX1679.) Ms. Wigley changed those answers by re-allocating points for Dentsply Classic teeth from 80 to 82 (C056), from 90 to 87 (C050), and from 80 to 85 (C055). (DX1679.)

378. Michael Lavu of Myter Dental Lab & Co. Inc. completed questionnaire no. 221. (DX1680.) Instead of point allocations for each brand, Mr. Lavu allocated a range of percentages for each brand and circled the distribution option (*i.e.*, local dealer, mail-order dealer, manufacturer directly) that, apparently, his lab would utilize to make purchases for each brand through each method of distribution. (DX1680.) For instance, on card C141, Mr. Lavel circled "yes" under the "Local Dealer" and "Mail-Order Dealer" columns next to Dentsply Bioform IPN. He wrote in 50%-50%, suggesting he would purchase half from a local dealer and half from a mail order dealer. Mr. Lavu followed the same procedure for each of the brands across all eight cards. (DX1680.) Ms. Wigley changed all of Mr. Lavu's responses. This was done, on card C141 for instance, by giving all brands 11 points with the exception of Kenson, which was given 12 points, more than any other brand. (DX1680.) On card C057, all the Dentsply brands were changed to 12 points, while Kenson and Vita both were given 13 points.

379. The scenario cards filled out by John Miklebost of Alpha Omega Dental Lab (questionnaire no. 234) were not completed according to the instructions. (DX1681.) On Card C070, Mr. Miklebost allocated 25 points each for Dentsply's

Bioform IPN, Bioblend IPN and Ivoclar Vivodent PE, totaling 75 points. Ms. Wigley changed Mr. Miklebost's allocations giving the Dentsply brands 33 points and giving Ivoclar 34 points, more than the Dentsply brands. (DX1681.)

380. The scenario cards filled out by Mike Koesler of Perform Dental Prosthetics (questionnaire no. 399) were not completed according to the instructions. (DX1682.) Instead of allocating 100 points on each card, on six cards Mr. Koesler wrote either "none" or "same" or a combination of the two on each card. (DX1682.) On card C107, Mr. Koesler wrote "none" as his responses. On some of these cards, Ms. Wigley changed Mr. Koesler's entries of "same" were changed to point values totaling 100, while the entries of "none" were left alone. (DX1682.)

381. Barbara Kish of Kish Dental Lab completed questionnaire no. 406. (DX1683.) On cards C141, C118 and C114, Ms. Kish's point allocations totaled 110 points. (DX1683.) Ms. Wigley changed those answers by re-allocating points for the brands of teeth listed to total 100 points. (DX1683.) Ms. Kish did not complete cards C117 and C119. (DX1683.)

382. In total, Ms. Wigley changed the point allocations for approximately 38 questionnaires, so that about 15% of all respondent cards had points changed. (Tr. 4066-67 Reitman; DX1684.) Ms. Wigley was the callback interviewer on each questionnaire. All 38 scenario cards were used to compile the survey data. (Tr. 887-888 Wind.)

E. The Results Of The Analysis Of The Survey Data Are Not Replicable

383. A key aspect of any scientific approach is replicability. (Tr. 3061 Rossi.) Replicability is the ability of another person educated in the art of the area to replicate the results of the analysis. (Tr. 3061 Rossi.) This enables the reviewer to

inspect the analysis and critique it, which is the whole point of the scientific inquiry. (Tr. 3061 Rossi.) This allows other scientists to learn from the analysis. (Tr. 3061 Rossi.) The scientific method is every bit as applicable in survey research as it is in other scientific domains. (Tr. 3061 Rossi (“[I]f you don’t provide the details” to replicate the results of the analysis, then “you are not applying scientific method”).)

384. Dr. Rossi was unable to replicate the PRIDEM software used to analyze the data derived from the agency’s survey. (Tr. 3064-65 Rossi.) Prof. Wind regards PRIDEM as propriety software. Prof. Wind asserted that the only way to access PRIDEM is to hire Prof. Wind or one of his associates. (Tr. 3064-65 Rossi; Tr. 901 Wind.) The agency never produced the source code for PRIDEM to Dr. Rossi. (Tr. 3242 Rossi.) He could not inspect the computer instructions underlying PRIDEM. (Tr. 3065 Rossi.) Dr. Rossi described PRIDEM as a “black box.” (Tr. 3065 Rossi (“You put in the data, out come some numbers and how that black box works, I have no idea”).) As Dr. Rossi pointed out, it was not necessary for the agency to utilize PRIDEM to undertake analysis of the survey data. (Tr. 3065 Rossi.) There are a number of standard statistical methods and packages available that can perform the analysis and that are fully replicable. (Tr. 3065 Rossi.)

F. The Lack Of A Standard Error Calculation Renders The Conclusions Meaningless

385. Prof. Wind’s and Dr. Reitman’s failure to calculate a standard error measurement for the survey result has rendered the survey data uninformative. A confidence interval is a measure of percent of people who respond in a certain way. The measure is used to help determine whether the estimate given is statistically significant. In common parlance, the estimate is sometimes referred to as “plus or minus a percentage.” Thus, a confidence interval typically is presented as plus or minus x%. (Tr. 904 Wind.) Prof. Wind did not calculate a confidence interval with PRIDEM, claiming

that it was impossible to do. (Tr. 903-05 Wind.) Dr. Rossi testified that Sawtooth, a commercial version of PRIDEM, provides confidence intervals, standard errors and other measures of reliability. (Tr. 3068-69 Rossi.) In Dr. Rossi's opinion, if Prof. Wind cannot calculate a formal statistical reliability measure using PRIDEM, then PRIDEM does not constitute a formal statistical procedure with a rigorous basis (Tr. 3068 Rossi), and, moreover, has no utility in econometrics (Tr. 3247 Rossi).

386. Neither Prof. Wind nor Dr. Reitman calculated a sampling error for their estimates of share change and price change. (Tr. 3066-67 Rossi.) Prof. Wind's Exhibit 4 merely provides estimations and cannot be calculated for its statistical significance. According to Prof. Wind, the important question is not whether estimations are statistically significant, but rather whether estimations are "managerially significant." (Tr. 905 Wind.) In his opinion, the concept of statistical significance is not the same as managerial significance. (Tr. 905-06 Wind.) Prof. Wind conceded on cross-examination that his intention was to provide the Court with an estimation and have the trier of fact determine whether the estimation is "managerially meaningful." (Tr. 906-07 Wind.)

387. As Dr. Rossi testified, it is "absolutely incumbent upon anyone using a sample to make inferences about the population [to] produce some measure of statistical reliability." (Tr. 3061 Rossi.) To Dr. Rossi, "it virtually goes without saying it's endorsed by every possible authority in this area." (Tr. 3061 Rossi.)

**1. Dr. Reitman's Scenarios Do Not Accurately
Reflect The Market Without Dealer Criterion 6**

388. Dr. Reitman used the survey data in his econometric modeling of the purported market share and price effects resulting from Dealer Criterion 6. (Tr. 1469, 1530-32, 1539, 1692 Reitman.) Dr. Reitman analyzed the survey data to determine whether labs would buy more of a particular brand of artificial teeth if they were

available in other distribution models. (Tr. 1606-07 Reitman.) The objective of the entire survey analysis was to try and simulate a world without Dealer Criterion 6 and predict something about possible effects on market shares and prices for artificial teeth. Dr. Reitman looked at the survey data to quantify the magnitude of these effects that he already had concluded existed. (Tr. 3070-72 Rossi; 1692 Reitman.) Dr. Reitman himself admitted that he analyzed the survey after forming his initial opinion. (Tr. 1464 Reitman.)

389. Dr. Reitman's assumption that all labs will have access to local dealers, whatever the term may mean, in the absence of Dealer Criterion 6 is unrealistic. (Tr. 3075-76 Rossi.) Given that Vita and Ivoclar have a combined share of less than 15% of the market today, it is very unlikely that local dealers would all of a sudden spring up or that all Dentsply dealers would now take on Vita and Ivoclar and introduce them into their catalogs. (Tr. 3075-76 Rossi.) Prof. Wind acknowledged that one criticism of making market share predictions based on conjoint analysis is that conjoint models are likely to have attributes excluded from the model that may affect behavior in the marketplace. (Tr. 836 Wind.)

390. The exercise included in Part B of the survey asked survey respondents to allocate 100 points. This one hundred-point allocation did not constitute a breakdown of how many of each brand the lab would buy in its next one hundred purchases. Rather, the survey "[j]ust asked for a hundred points." (Tr. 841 Wind.) Further, the survey does not measure demand experienced by labs for brands of teeth even though this demand may influence a lab's decision to purchase a particular brand. (Tr. 868 Wind.) The cards also did not mirror market conditions. Card 141, the base card scenario, did not represent exactly the existing market conditions. (Tr. 854 Wind.) For example, even though Card 141 was designed to reflect existing market conditions, the card lists Vitapan as being sold by local dealers. (Tr. 859-60 Wind.) To create the

base scenario used by Prof. Wind in Exhibit 4 of his report, he had to estimate an existing market scenario for Vitapan since he did not have this data from the lab respondents. (Tr. 862 Wind.) As another example, the survey cards do not match market conditions because a brand such as the Universal Verilux has the same price for all distribution options. (Tr. 894-95 Wind.)

391. Dr. Reitman agrees that it “was not part of the exercise” of the survey to have the scenario cards reflect prices that tooth manufacturers actually would charge. (Tr. 1614 Reitman.) He conceded that “the actual representation [of] what is on the card is not supposed to represent what is out there in the real world.” (Tr. 1614-15 Reitman.) As Dr. Reitman testified, the prices manufacturers would charge under different distribution options were not based on data garnered from manufacturers. (Tr. 1614 Reitman.) The scenario cards provide tooth pricing alternatives for rival manufacturers that reflect a price decrease when teeth are made available through local dealers. (*Compare* GX140 cards C006 with C007.) In actuality, Ivoclar increased prices when it gained distribution through a local Trubyte dealer – Frink Dental Supply. There is no evidence of a manufacturer decreasing prices upon gaining local distribution, where previously it had none. Put simply, the cards did not represent the real world. (Tr. 1613-15 Reitman.)

G. Dr. Reitman Manipulated The Analysis Of The Survey Data

392. Dr. Reitman arbitrarily changed a key parameter estimate in order to obtain data more in line with his conclusions. Dr. Reitman’s model produced negative marginal costs. (Tr. 3079 Rossi.) In other words, the model produced a result that showed that, instead of incurring production costs, tooth manufacturers are paid to manufacture a marginal unit, *i.e.*, their next unit, of teeth. (Tr. 3079 Rossi.) As Dr. Rossi explained, negative marginal costs in a production environment are not possible. Dr.

Reitman realized this, concluded that his price sensitivity numbers were too low and decided to change them. (Tr. 3079 Rossi.)

393. Dr. Reitman used parameters on price sensitivity for Dentsply and for other premium brands. (Tr. 3078-79 Rossi.) Dr. Reitman arbitrarily changed the price sensitivity parameter for the other premium brands. (Tr. 3210 Rossi.) This change allowed Dr. Reitman to obtain an economically plausible result. (Tr. 3081 Rossi.) There is no justification for changing the parameters of a model based on criteria other than the sample data. (Tr. 3082 Rossi.) Thus, the end result here is not based on data, but on what Reitman would like the data to say. (Tr. 3081-82 Rossi.)

394. Model specification is the particular analytical model chosen to perform analysis. (Tr. 3083 Rossi.) Dr. Reitman used a different model for analyzing the price effect than he did for analyzing market share – a practice which Dr. Rossi does not endorse. (Tr. 3083-84 Rossi.) Specifically, Dr. Reitman used a simple model to obtain a statistically significant parameter on the effect of local dealer availability on market share. Prof. Wind agreed that the survey analysis does not show where market share shift came from. For example, Prof. Wind did not know if market share gains came at the expense of Universal, Myerson, Kenson, Justi or Dentsply. (Tr. 889-92 Wind.) The model Dr. Rossi used to predict a share shift produced only a minimal price effect. (Tr. 3083-84 Rossi.) So, he added terms or parameters that were not statistically significant in order to obtain a measurable price effect. (Tr. 3084-87 Rossi.) These calculations are subject to a large amount of sampling error. (Tr. 3088-91 Rossi.) As a result, it is not possible to assess the impact on pricing using the survey data. (Tr. 3088-91 Rossi.)

H. Dr. Reitman Used The Wrong Model To Analyze The Data

395. Dr. Reitman used the wrong model for analysis of the survey. Dr. Reitman used a multinomial Logit model to evaluate the market share data elicited from Part B of the survey. (Tr. 1541-42 Reitman.) But Dr. Reitman viewed each card as 100 separate survey responses. Dr. Rossi testified that this characterization was improper and each card should be analyzed as only one lab response. (Tr. 3092-94 Rossi.) The model used by Dr. Reitman was not designed for the task that he undertook. The model Dr. Reitman chose required group data. (Tr. 3094 Rossi.) The implication of using the wrong model is that it may be misspecified, meaning the predictions from the model can be wrong. Additionally, the statistical significance of Dr. Reitman's findings may be overstated. (Tr. 3093 Rossi.)

396. Dr. Reitman's own work confirms misspecification of his Logit model. In his report, Dr. Reitman makes reference to a test for misspecification proposed by Prof. Hal White. Under Prof. White's test, the Hessian form and outer product form should be equivalent to one another if the model is correct. Dr. Reitman's Hessian and QML estimates do not create a one-to-one ratio (Tr. 4053-54 Reitman.) There are serious consequences to using a misspecified model. (Tr. 3096 Rossi.) A misspecified model should not be used for the purpose of making policy predictions because the predictions are going to be incorrect. (Tr. 3098-99 Rossi.) Because Dr. Reitman's model is wrong, his predictions about shares also are wrong. (Tr. 3094-97 Rossi.)

397. Dr. Reitman computes the QML standard errors incorrectly because the formula that Dr. Reitman uses is incorrect. (Tr. 3097-98 Rossi.) Dr. Reitman conceded that if key factors were omitted from his model, the reliability of his results would be suspect. (Tr. 4051 Reitman.)

398. Dr. Reitman admitted that since the Logit model is based on input from the survey, if the inaccuracy of the survey data was "widespread," then the accuracy of the results would be problematic. (Tr. 4056-57 Reitman.) When questioned about the adjustments made by Ms. Wigley to numerous cards, Dr. Reitman acknowledged that some of the reallocations constitute material adjustments and not merely scaling adjustments. He then admitted that if all of the changes resulted in a larger share shift for Vita and Ivoclar, then it could create a suspicion about his results. (Tr. 4069-71 Reitman.)

I. Dr. Reitman's Conclusions Are Not Statistically Reliable

399. Dr. Reitman conceded that he did not calculate a confidence interval for his estimated 4.2 percent price decrease. (Tr. 1646-47 Reitman.) As a result, he did not know the point range around his estimate. (Tr. 1646-48 Reitman.) Dr. Reitman also admitted that three out of four of the parameters he used to calculate the price effect are not statistically significant. (Tr. 4042-48 Reitman.) This includes the parameter specifically used to calculate Dentsply's price interaction. (Tr. 4048 Reitman.) Because Dr. Reitman's model is not statistically significant as to Dentsply's prices, and therefore predicts no price effect for Dentsply's prices, the effect shown on tooth prices overall is negligible. (Tr. 4044-45 Reitman.)

400. Dr. Reitman rendered his opinion on price and share shifts in the tooth market based on an econometric model he describes as Method 2. In this method, Dr. Reitman endorses what would happen in a world without Dealer Criterion 6. (Tr. 1619-20 Reitman; Tr. 3100 Rossi.) In Dr. Reitman's opinion, without Dealer Criterion 6, the prices for Vita and Ivoclar teeth would drop 18.9%, while Dentsply teeth would drop in price 2.6%. (Tr. 1622-23 Reitman; DX1597.) The overall price effect in the tooth market, according to Dr. Reitman, would be -4.2%. (Tr. 1621-22 Reitman; DX1597.)

Additionally, Dr. Reitman estimated that the change in combined share of Vita and Ivoclar is +35.5%. (DX1597.)

401. Dr. Reitman did not perform any calculation of statistical reliability of Method 2's estimates. Dr. Reitman had all the information he needed to make these calculations. (Tr. 3102 Rossi ("Anyone with a basic knowledge of econometrics can do this.")) Dr. Rossi, though, calculated the likely size of sampling error of Dr. Reitman's price and share shift simulations.

402. Dr. Rossi testified that he ran 511 draws of simulations relating to the error ranges of Dr. Reitman's estimates. (Tr. 3104-05 Rossi.) These results of these simulations suggest "gigantic errors" in Dr. Reitman's share and price estimates. (Tr. 3107 Rossi; DX1623.) For example, Dr. Reitman determined that the change in total tooth market prices is -4.2%. (Tr. 1621-22 Reitman.) Dr. Rossi calculated the estimated error range to be plus or minus 35 percent. (Tr. 3106-08 Rossi.) Based on this error range, Dr. Rossi explained that he really does not know anything about what the prices change will be. The price could drop as low as 35% of 4.2, or it could be as high as +31.2%. (Tr. 3108 Rossi.) The standard test for significance is whether zero appears within the error range. (Tr. 3108 Rossi.) Because of the huge error range, Dr. Reitman's price estimate is "completely unreliable." (Tr. 3109 Rossi.)

403. Dr. Reitman's estimate of Vita and Ivoclar's share is 35%. Yet, Dr. Rossi calculated the estimated error range to be plus or minus 50.8%. (Tr. 3109 Rossi; DX1623.) As a result, using Dr. Reitman's model, the combined share of Vita and Ivoclar actually could drop over 15%. (Tr. 3110 Rossi; DX1623.) In his opinion, Dr. Reitman's estimations do not tell us anything about the projected change in market share. (Tr. 3109 Rossi; DX1623.) Simply put, in Dr. Rossi's opinion, Dr. Reitman's share and prices estimates are "beyond the capabilities of the data." (Tr. 3109 Rossi; DX1623.)

404. Dr. Reitman estimated a drop in Vita/Ivoclar prices by 18.9%. (Tr. 1622 Reitman.) Dr. Rossi estimated the error range of this calculation as plus or minus 152%. (Tr. 3110 Rossi.) In other words, the prices of Vita and Ivoclar teeth could change by as much as 152 percent in either direction. Dr. Reitman described the magnitude of this error as "staggering." (Tr. 3110 Rossi.) Dr. Reitman's response to this criticism was that if Dr. Rossi had stopped after 500 simulations, rather than run 511 simulations, the error range drops to 119%. (Tr. 3912-13 Reitman.) In Dr. Rossi's opinion, even an error of 50% is "gigantic" and renders Dr. Reitman's estimates unreliable. (Tr. 3110 Rossi.)

405. As a result of all of these factors, namely (1) the screening questionnaire failed to identify relevant respondents, (2) the complexity and confusing nature of questionnaire instructions, (3) their use of critical undefined terms, (4) the lack of a pre-test, (5) the low response rate, (6) the failure to establish non-response bias, (7) the evidence that respondents were unwilling or unable to devote time to take the survey seriously, (8) editing/altering the lack of replicability, (9) the failure to calculate a standard error measurement, (10) card scenario failure to accurately reflect a market without Dealer Criterion 6, (11) Dr. Reitman's arbitrary change of a key parameter estimate, (12) Dr. Reitman's use of different models for analysis, (13) Dr. Reitman's use of the wrong Logit model to evaluate market share data, (14) Dr. Reitman's incorrect computation of standard errors, and (15) Dr. Reitman's failure to perform any calculation of statistical reliability of Method 2's estimates, the agency's survey is entitled to no weight. Thus, the agency has failed to quantify any effect on prices from Dentsply's Dealer Criterion.

406. Even if the survey data and Dr. Reitman's analysis of the data are deemed reliable, they nonetheless are uninformative. Dr. Reitman's analysis predicts that prices would fall in the absence of Dealer Criterion 6. But whether Dealer Criterion 6

constitutes an anticompetitive restraint or an efficiency enhancing, procompetitive policy, its removal is expected to catalyze a decrease in tooth prices. The policy enables Dentsply to engage in substantial demand-generating promotion by protecting its ability to recoup this promotional investment through higher prices charged for products sold to customers that Dentsply creates for its dealers. If removed, Dentsply no longer can protect its promotional investment from free-riding rivals, and prices are likely to fall. If Dealer Criterion 6 is anticompetitive, its removal also will spur a decline in tooth prices. Dr. Reitman's analysis does not provide information sufficient to determine whether this price effect results from removal of an anticompetitive restraint as opposed to a procompetitive one.

407. Dr. Reitman conceded that there are procompetitive benefits from Dentsply's dealers criteria, but they are "negligible." (Tr. 3918 Reitman.) Since the agency has no evidence of anticompetitive effect, even negligible benefits, if that is all there were, justify Dentsply's policy.

Respectfully submitted,

/s/

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CERTIFICATE OF SERVICE

I, Christian Douglas Wright, hereby certify that copies of the foregoing *Defendant Dentsply International, Inc. 's Proposed Findings of Fact* were caused to be served on March 28, 2003 on the following counsel of record in the manner indicated:

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